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REPORT AND SYMPOSIUM.

TUBERCULOSIS AND THE NATIONAL INSURANCE ACT.

THE NATIONAL INSURANCE ACT, 1911, marks the beginning of a new era in the campaign against Tuberculosis.¹ With the coming of fresh powers provided by this comprehensive and far-reaching measure the Anti-Tuberculosis Movement enters upon the most important chapter in its history.² No longer will the combat against the common foe, tuberculosis, be conducted as a guerrilla war. The organized forces which are to be brought against the Captain of the Men of Death and his satellites are to be co-ordinated, and the machinery of war is to be such as will be effective and continuous.

The provisions of the National Insurance Act regarding tuberculosis will come into operation on July 15 next. It is therefore essential that no time be lost in the initiation and organization of an administrative system which shall be national, uniform as far as circumstances will permit, and capable of attaining the maximum of benefit with the minimum of expenditure.

In order to provide reliable guidance, an Advisory Committee was appointed.³ The preliminary or interim report of this important and

¹ A Symposium on "National Insurance and Tuberculosis," with "a Collection of Representative Opinions," appeared in last year's July issue of this Journal, Vol. V., No. 3, p. 161. 1911.

² Important papers on National Insurance in relation to Tuberculosis appeared in THE BRITISH JOURNAL OF TUBERCULOSIS for last April, Vol. VI., No. 2, pp. 86-108. 1912.

³ The constitution of this Departmental Committee on Tuberculosis was indicated in our last issue; see BRITISH JOURNAL OF TUBERCULOSIS, April, Vol. VI., No. 2, p. 131. 1912.

representative body of advisers has now been issued. It is a document of such interest and value that we have thought it desirable to devote a considerable portion of this number of the Journal to the presentation of its chief conclusions and recommendations.

We believe that the collection of representative opinions which follow the abstract of the Report will prove of considerable service as indicative of the trend of the views of reliable experts, on a scheme which is at least comprehensive and scientific.

THE INTERIM REPORT OF THE DEPARTMENTAL COMMITTEE ON TUBERCULOSIS.

The Departmental Committee on Tuberculosis appointed by the Treasury on February 22, 1912, has presented an interim report which was issued on April 30.¹

The Committee, according to its terms of reference, was directed "To report at an early date upon the consideration of general policy in respect of the problem of tuberculosis in the United Kingdom, in its preventive, curative, and other aspects, which should guide the Government and local bodies in making or aiding provision for the treatment of tuberculosis in sanatoria or other institutions or otherwise."

The Committee clearly recognize and definitely state that: Any scheme which is to form the basis of an attempt to deal with the problem of tuberculosis should provide—(1) That it should be available for the whole community; (2) that those means which experience has proved to be most effective should be adopted for the *prevention* of the disease; (3) that a definite organization should exist for the *detection* of the disease at the earliest possible moment; (4) that, within practicable limits, the best methods of *treatment* should be available for all those suffering from the disease; (5) that concurrently with the measures for prevention, detection, and treatment, provision should be made for increasing the existing knowledge of the disease and of the methods for its prevention, detection, and cure by way of *research*.

The Report explains in detail the present powers of existing local authorities in England and Wales. In addition to the medical profession and to voluntary societies, the existing bodies at present engaged, in greater or less degree, in dealing with tuberculosis in England and Wales are—(1) County Councils; (2) Sanitary Authorities and Joint Hospital Boards; (3) Local Education Authorities; (4) Poor Law Authorities; (5) The Metropolitan Asylums Board.

¹ Interim Report of the Departmental Committee on Tuberculosis (Cd. 6164, p. 28). To be purchased either directly, or through any bookseller, from Wyman and Sons, Ltd., Fetter Lane, E.C., and 32, Abingdon Street, S.W.; or Oliver and Boyd, Tweeddale Court, Edinburgh; or E. Ponsonby, Ltd., 116, Grafton Street, Dublin, 1912. Price 3d.

The powers of local authorities in Scotland and Ireland are set out in separate sections of the Report dealing with these countries.

The Report explains in detail the character and scope of the new powers provided by the National Insurance Act.

The Act, which applies throughout the United Kingdom, deals with—(1) Treatment ; (2) erection of sanatoria and other institutions ; (3) research ; (4) education.

(1) *Treatment.*—Section 59 creates an Insurance Committee for every county and county borough. Regulations to be made by the Insurance Commissioners must require the Insurance Committee of every county to prepare, after consultation with the County Council, and submit for the approval of the Commissioners a scheme for the appointment of District Insurance Committees for the county, and prescribing the area to be assigned to each such committee. This scheme must in any case provide for the appointment of a District Insurance Committee for each borough (including the City of London and a metropolitan borough) within the county having a population of not less than 10,000, and for each urban district within the county with a population of not less than 20,000, subject to any arrangements for grouping with adjoining districts. Section 16 requires Insurance Committees to make arrangements with a view to providing treatment for insured persons suffering from tuberculosis—(a) in sanatoria and other institutions, with persons or local authorities (other than poor law authorities) having the management of sanatoria or other institutions approved by the Local Government Board ; (b) otherwise than in sanatoria or other institutions, with persons and local authorities (other than poor law authorities) undertaking such treatment in a manner approved by the Local Government Board. The arrangements made by the Committees must be to the satisfaction of the Insurance Commissioners. The same section provides, for the purpose of defraying the expense of providing this treatment, the sum of 1s. 3d. per annum in respect of each insured person payable out of the insurance fund. A further sum of one penny in respect of each insured person is available from the Exchequer, but may be allocated by the Insurance Commissioners to research. It is estimated that the number of persons in the United Kingdom who will become insured will be a little over 14,000,000. The income of Insurance Committees for this purpose should, therefore, be about £880,000 per annum (excluding the sum which may be appropriated to research). This figure will, of course, rise in proportion to the natural increase of the insured population. Insured persons cannot claim treatment as a matter of right, but must be recommended for sanatorium benefit by the appropriate Insurance Committee. Section 17 enables Insurance Committees, if they think fit, to extend similar treatment to the dependents of insured persons or to

any class of such dependents. It further provides that, if the sums made available by Section 16 are not sufficient to provide for the treatment of such dependents, the deficit may be made up in equal shares out of moneys provided by Parliament and out of moneys derived from the county or borough rates, provided that the expenditure occasioning the deficit has received the sanction both of the Treasury and of the Council of the county or county borough. Section 22 enables borough, or urban, or rural district councils to agree to repay to the County Council the whole or any part of the sums payable by the County Council under Section 17, so far as such sums are properly attributable to the borough or district. Section 64 (4) enables Insurance Committees to enter into agreements with any person or authority (other than a poor law authority), that, in consideration of such person or authority providing treatment in a sanatorium or other institution or otherwise, the Committees will make annual or other payments, subject to such conditions and for such period as may be agreed, towards the maintenance of the institution or provision of treatment.

(2) *Finance, Erection of Sanatoria, etc.*—Section 64 (1), read in connection with Section 16 (1) (b) of the Finance Act, 1911, makes available a sum of £1,500,000 for the purpose of the provision of and making grants in aid to sanatoria and other institutions in the United Kingdom. These grants are to be distributed in England, Scotland, and Ireland by the Local Government Board, with the consent of the Treasury, who, in turn, are to consult the Insurance Commissioners before giving their consent. In Wales the distribution is in the hands of the Welsh Insurance Commission, subject to the consent of the Treasury. It is to be observed that the institutions to which grants may be made are not confined to institutions for the use of insured persons. The money is available for the provision of institutions for the use of the whole population. The £1,500,000 is to be apportioned between England, Wales, Scotland, and Ireland in proportion to their respective populations, according to the Census of 1911. Thus, roughly, about £1,116,000 will be apportioned to England, £81,000 to Wales, £158,000 to Scotland, and £145,000 to Ireland. Provision is also made in this section for the Local Government Board (1) to authorize County Councils to provide, manage, and maintain institutions, and (2) to make orders for the constitution of joint committees, joint boards, etc., between County Councils, County Borough Councils, and other local authorities for the purpose of facilitating co-operation. By Section 77 the Local Government Board may, for the purposes of their powers and duties under Part I. of the Act, hold such local inquiries and investigations as they may think fit. The section further provides (1) that any approval given by the Local Government Board may be given for such term and subject to such conditions as the Board may

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think fit, and that the Board shall have power to withdraw any approval which they have given; (2) that the Board may make it a condition of any approval given or grant of money to be made, that the Board shall have such powers of inspection as may be agreed.

(3) *Research*.—By Section 16 (2), as has already been stated, a sum of one penny per annum per insured person is provided by the Exchequer, and may be retained by the Insurance Commissioners for research. This sum should amount to about £58,800 per annum, increasing in proportion to the natural increase in the number of persons insured.

(4) *Education (by Means of the Spread of Information)*.—By Section 60 duty is cast upon Insurance Committees to make such reports as to the health of insured persons as the Insurance Commissioners, after consultation with the Local Government Board, may prescribe, and to furnish statistical and other returns, etc., which in turn are to be forwarded by the Insurance Commissioners to the local authorities affected or interested. Insurance Committees must also make provision for lectures and the publication of information on questions relating to health, either directly or through existing local education authorities, universities, or other institutions. It must, of course, be borne in mind that the duties of Insurance Committees under this section, so far as they relate to matters of health, are not confined to tuberculosis.

Insurance Committees and Medical Officers of Health.—By Section 60 (2) Insurance Committees are authorized to obtain the advice and assistance of any Medical Officer of Health, with the consent of his Council, in the exercise and performance of their powers and duties under the Act.

General Principles of Treatment.

“Sanatorium benefit” in the National Insurance Act, 1911, means treatment in sanatoria or other institutions or otherwise. The expression is not used in the restricted sense of a course of treatment carried out in an institution called a sanatorium. Similarly, the expression “sanatorium treatment” has an equally wide significance. The principles of treatment, which have been elaborated for the most part in sanatoria, have a wide application outside these special institutions. The advantages of this form of treatment can, in many instances, be given to patients who are living in their own homes or in shelters. In some of these cases it may be desirable to secure that the patient should be provided with additional food, or a separate room or bed, in order to insure efficient treatment. Under suitable conditions, especially if the treatment is being carried out under the advice of a medical man with special knowledge of modern methods, home treatment may be, in all essentials, sanatorium treatment. Sanatorium treatment may be

considered from the points of view of (1) education and (2) therapeutics, though in practice they should be complementary to each other, and are, indeed, inseparable. The Committee wisely insist that sanatorium treatment must be taken as a whole, and due weight must be given to each detail, whether it be included under the heading of education, hygiene, medical supervision, etc. The belief that any considerable proportion of consumptives may safely depend on any one factor of the treatment, to the exclusion of the others—such, for instance, as satisfactory housing, adequate nutrition, the sanatorium, or tuberculin—is a mistake, and, if acted upon, is likely to diminish the value which may be expected to accrue from each and all of these when used in proper conjunction. In a large number of instances of pulmonary tuberculosis it is impossible to estimate the probable effect of treatment in a sanatorium without an opportunity of observing each individual case. Without prejudging the question as to whether sanatorium treatment should be carried out at the patient's home, in a hospital, or in a sanatorium, it may be said that under existing conditions most patients suffering from pulmonary tuberculosis would be given their best chance by a period of treatment in a sanatorium. It should, however, be borne in mind that a short stay in an institution in which the patient may be educated, followed by a course of home treatment, in shelters, etc., under close medical supervision, is a form of sanatorium treatment which has certain advantages, and which may successfully be adopted in a large number of cases. The success of treatment in sanatoria has no doubt been adversely influenced in the past by—(1) The ignorance of the public concerning the significance of early symptoms; (2) the lack of facilities for early diagnosis; (3) the admission to, and continued treatment in, sanatoria of unsuitable cases; (4) ineffective or insufficient after-care; (5) the fact that so many sanatoria have been unable to attract the services of medical officers possessing an expert knowledge of the work, and that in consequence many sanatoria have been conducted as convalescent homes rather than as institutions in which efficient treatment has been given.

Classification of Patients.

For the purposes of the Report, cases of pulmonary tuberculosis may roughly be divided into six classes: (1) Cases in which the disease can be diagnosed or is strongly suspected, but in which there is no evident impairment of the working capacity. (2) Cases of recent onset, with some impairment of the working capacity, but without marked evidence of ill-health. (3) Cases of recent onset with evidence of acute illness. (4) Cases of a longer history of illness. In some of these cases permanent arrest of the disease may be hoped for, but in the majority restoration to full working capacity for more than a comparatively

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short period is not to be looked for. (5) Cases in which there is permanent loss of working capacity. Many of these patients live for a considerable period in a condition of chronic ill-health. (6) Cases in which a fatal termination within six months is probable.

Scheme Recommended for the United Kingdom.

The scheme which the Committee recommend for the prevention, detection, and treatment of the disease is intended to complete existing public health administration in respect of tuberculosis, and is based on the establishment and equipment of two units related to the general public health and medical work carried on by the Medical Officers of Health, as described later, and working in harmony with the general practitioner. The first unit consists of the *tuberculosis dispensary*, or an equivalent staff as set out in this Report. The second unit consists of the *sanatoria, hospitals, etc., in which institutional treatment is given*. The Committee are of opinion that the tuberculosis dispensary should be the common centre for the diagnosis and for the organization of treatment of tuberculosis in each area, at which the various bodies and persons connected with the campaign against tuberculosis will be brought together. The aim should be that no single case of tuberculosis should remain uncared for in the community, and that whatever services the scheme provides should be available for all cases of the disease. Next to the tuberculosis dispensary should stand the second unit, consisting of a system of sanatoria, hospitals, farm colonies, open-air schools, etc. The tuberculosis dispensary should be linked up to these institutions, for which it will act as a clearing-house.

Functions of the Tuberculosis Dispensary.

These should be to serve as (1) receiving-house and centre of diagnosis; (2) clearing-house and centre for observation; (3) centre for curative treatment; (4) centre for the examination of "contacts"; (5) centre for "after-care"; (6) information bureau and educational centre. These are separately considered.

As to the establishment of urban dispensaries, it is thought that in most instances existing buildings can be adapted for the purpose of a dispensary; in other cases it may be necessary to build a dispensary; or, again, it may be convenient that the dispensary should form a department of an existing hospital or infirmary. In a few large centres, more especially in centres where medical training is given, it may be advisable to have a special building on a larger scale. The dispensaries should be easy of access to the working-class population. In some of the largest cities, especially in those in which the districts occupied by the working-classes are widely separated from one another, it will be desirable to establish one or more sub-centres as branch dispensaries. The following accommodation is considered desirable: An office,

general waiting-room, committee-room, consulting-rooms (one or more), and dressing-rooms. There should also be facilities for laryngoscopical and bacteriological examination, and for the provision of drugs.

The important question of cost receives full consideration. The capital outlay will vary according to the type of building selected. The adaptation and equipment of an existing house should not cost more than £250, and often might cost considerably less than this sum.

The staff will include a whole-time Chief Tuberculosis Officer, responsible for the general conduct and administration of the dispensary. He should be a first-class clinician, with special training in tuberculosis. Associated with him, when necessary, should be one or more whole-time assistant tuberculosis officers, according to the size of the area served by the dispensary. Nurses will, of course, be necessary, and it is an advantage that these nurses should have had special training in tuberculosis work. Well-trained nurses help very much in the education of patients in the principles of sanatorium treatment, and by their periodic visits assist both the tuberculosis officers and the general practitioners in supervising home treatment. District and other voluntary nursing associations might be utilized. A clerk and dispenser will be needed. It is insisted that the salaries should be such as to secure men of the requisite ability. In order to attract the right type of men as chief tuberculosis officers, it will usually be found necessary to offer a salary of not less than £500, with prospects of increase.

Rural dispensaries call for special consideration. In some rural districts branch dispensaries, with a simpler equipment, closely linked with a central dispensary, might be established in one or more of the principal small towns of the area. Local sub-centres should also be established, to which the tuberculosis officer and nurse of the dispensary should make periodical visits. These sub-centres should be placed in small towns or large villages, and efforts should be made, by attendance on stated days, to get into touch with as large a number of persons as possible. In other rural neighbourhoods no accommodation will be found necessary, as the tuberculosis officer will himself call upon patients in their own homes. The salaries and cost of maintenance of a rural dispensary unit, with its branches, appears to be very similar to the cost of maintenance of an urban dispensary. The additional expenditure on each sub-centre should be quite a small sum, the chief items being the travelling expenses of the visiting staff from the main dispensary.

The organization of voluntary care committees, formed of representatives from the Local Authorities, Boards of Guardians, Insurance Committees, and from all charitable and social work organizations in the district, is to be encouraged.

The Committee emphasize the fact that the "dispensary" is essentially not a building, but an organism. The essential element which must always be present is the Chief Tuberculosis Officer, appointed by the local authority, standing in such relation to the Medical Officer of Health and the general scheme of public health administration as may be defined by the regulations of the local authority, acting as expert adviser to the local authority and Insurance Committee in matters of diagnosis and treatment, controlling, supervising, or acting in consultation with, as circumstances may determine, the whole-time subordinate medical officers and private medical practitioners by whom treatment is given, and himself treating cases for which special skill and experience are required.

As to the number of tuberculosis dispensaries required, the Committee are of opinion, without committing themselves too definitely to a figure, that one tuberculosis dispensary will be required in the immediate future for every 150,000 to 200,000, or even more, of the population in an urban neighbourhood. In rural neighbourhoods, where the population is scattered, it could usually only serve a smaller number.

The Second Unit of the Scheme.

Sanatoria, Hospitals, and other Institutions are essential elements in the scheme. A large proportion of cases, both of pulmonary and non-pulmonary tuberculosis, require treatment for a longer or shorter period in an institution. A certain proportion of the cases in which the working capacity is likely to be restored require treatment in a sanatorium. Hospital accommodation is required for a large number of persons : (a) for treatment and education ; (b) in emergencies ; (c) in acute disease for the purposes of observation until the character of treatment required can be ascertained ; and (d) for patients with advanced disease not able to be nursed at home, under conditions that will insure the patient's comfort and the safety of those about them. Patients are to be transferred to this second unit from the tuberculosis dispensary in its capacity of a clearing-house.

The Sanatorium buildings should consist of (1) the sanatorium proper ; (2) a hospital section for cases with acute symptoms (say 20 per cent. of the beds); (3) an administrative block. The buildings should be built with a view to expansion, and should be so arranged that treatment can be provided for both men and women. It is desirable that distinct institutions, or at least separate pavilions, should be provided for children. It is strongly recommended that an individual sanatorium should contain not less than 100 beds. The capital cost must vary with the number of beds, the cost of land, the material used, and local conditions. It should probably not, as a rule, exceed

£150 a bed, inclusive of cost of site and equipment. The cost of maintenance per bed will probably be from 25s. to 30s. a week.

The medical staff should consist of a medical superintendent, and two resident medical officers for an institution of 200 beds, and one resident medical officer for an institution of 100 beds. The salaries should be such as to secure men possessing the requisite ability. It must be remembered that the proper performance of their duties requires high and varied qualifications, and the Committee are of opinion that, in order to attract the right type of men as medical superintendents, it will usually be found necessary to offer a salary of not less than £500 a year with house, and with prospects of increase. At the present time, owing to the lack of facilities for obtaining experience in the institutional treatment of tuberculosis, there are comparatively few medical men and nurses who possess the necessary qualifications for posts in sanatoria. If a number of sanatoria are to be established, this deficiency must be borne in mind. It will take some months to give medical men and nurses the necessary training. A certain number of appointments should therefore be made in the near future, on the understanding that those selected should at once make adequate arrangements to secure the necessary training and experience.

The important question of the number of sanatorium beds and hospital accommodation required is only touched on. In the opinion of the Committee it is advisable to provide in the immediate future one bed per 5,000 population in the United Kingdom. Sanatoria should be complementary to each other in respect of the reception of patients, so that an overflow of cases from the area of one sanatorium should be received by another having vacant accommodation at the time. Arrangements to this end should be made by the Local Government Board.

Non-Pulmonary Tuberculosis.

This includes tuberculosis of the skin, glands, spine, joints, and peritoneum. Modern experience shows that treatment of these cases, in children at least, should be essentially conservative in character, and that the best results are obtained in institutions in the country. The number of beds required cannot be correctly estimated on the available data. The capital cost per bed may probably be put at £150, on an average, and the maintenance charge per bed per week at from 25s. to 30s. The Committee add that they do not consider it necessary to deal more fully in this Report with the question of non-pulmonary tuberculosis.

Position of Existing Voluntary Institutions.

The view is expressed that so far as possible, existing voluntary institutions such as sanatoria, etc., should be utilized, provided that

they fulfil the following conditions: (1) That they be approved as suitable by the Local Government Board; (2) that they fall into the general scheme for the prevention and treatment of tuberculosis; (3) that they be subject to inspection by the Local Government Board whenever considered necessary.

Duties and Qualifications of Heads of Dispensaries and Sanatoria, and Position of the General Medical Practitioner.

The chief tuberculosis officer of the dispensary should be independent of control by any other medical man so far as his clinical duties are concerned, and should, subject to his relationship to other officers as defined by the local authorities' regulations, be responsible for the management of these institutions. He should be in intimate relationship not only with Medical Officers of Health, but also with the general practitioners in the locality, and the medical officers of the several institutions (sanatoria, hospitals, etc.), which constitute elements in the co-ordinated scheme. He should decide as to the suitability of patients for the sanatorium, the hospital for advanced cases, etc., in co-operation, so far as is possible, with the general practitioners and with the medical officers of these institutions. He should also be in close touch with other authorities (including those responsible for Poor Law institutions), charity organization societies, and all agencies, voluntary or otherwise, which have an interest in tuberculous persons.

The Committee desire to lay emphasis upon the necessity of having suitably qualified and experienced medical men for the senior appointments in connection with the dispensaries and sanatoria. Indeed, the effectiveness and economy of the administration of the scheme suggested by the Committee will be dependent, in a large degree, upon the judicious selection of these officers. With a view to securing desirable officers the Committee recommend that, in giving or withholding approval, the Local Government Board should take into consideration the whole management and staffing of these institutions (including the tenure and other conditions of appointment of the staff), not only from the point of view of the advantage to the patients concerned, but in order to command the confidence and co-operation of the medical practitioners within the area. Whilst not desiring to lay down any hard-and-fast conditions, the Committee are of opinion that preference should be given to registered medical practitioners of suitable qualifications and experience and not less than twenty-five years of age, who have held house appointments for at least six months in a general hospital, in addition to a similar period of attendance at a special institution for the treatment of tuberculosis. They should also be competent to supervise such laboratory work as may be necessary.

The Committee are of opinion that it is of primary importance

to the lasting success of any scheme for dealing with tuberculosis that it should enlist the hearty co-operation and stimulate the interest of the general medical practitioners of the country. Their intimate personal relations with patients and their influence in the homes of the people are forces which should be actively enlisted in the campaign against the disease as aids to securing its early recognition and methodical treatment, as well as in promoting the effective after-care of cases of tuberculosis and in encouraging those healthy habits of life which are so essential to building up the powers of resistance to the disease. For these reasons the practice of the tuberculosis dispensary should be so arranged as to encourage general medical practitioners to seek the help and instruction which it affords both by consultation with its special medical officer in the homes of the patients and at the dispensary. Wherever practicable, the practitioners of an area, or some of them, should be engaged to serve as assistant medical officers to the dispensary, in rotation, or by some other agreed method. In order to secure these ends, the Committee believe that, as a rule, the following conditions are essential:

(1) The chief tuberculosis officer of the dispensary should be a whole-time officer whose duties will be such as will not bring him into competition with the other medical men of the district. He should be of suitable age and attainment and enough of an expert on the subject of tuberculosis to command general confidence. (2) The chief tuberculosis officer of the dispensary should, wherever practicable, act as the adviser to the Insurance Committee as to the character of the treatment of cases that are recommended for sanatorium benefit. The chief tuberculosis officer of the dispensary in such cases should act in an advisory and consultative capacity, his aim being to avoid unnecessary interference, and to establish such relations with the general medical practitioners that his advice and help will be gladly sought. (3) In the case, at all events, of insured persons, patients living at home who are treated at or under the supervision of the dispensary should generally be placed, where they are willing, under the care of some general practitioner who will carry out the necessary home treatment in consultation with the chief tuberculosis officer of the dispensary, and who will, where the patients are insured persons, be paid out of the funds available for Sanatorium Benefit. (4) Arrangements should be made for the provision of expert advice in surgical, dental, and in other cases where difficulties may arise.

Tuberculous Children.

Childhood affords an excellent opportunity for detecting and dealing with tuberculosis. The more the resistant power of children is increased, the lighter will be the burden of tuberculous disease in

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the adults of the next generation. The factors which tend to weaken the defensive powers of children can be brought under control easily and at an early age. Among these factors the Committee desire to lay stress on the deleterious effects of malnutrition. It is also of great importance that adequate measures should be taken to limit infection.

There is a certain amount of accommodation in voluntary and other institutions already existing for cases of pulmonary tuberculosis in children, and also a large number of beds for non-pulmonary tuberculosis. There are also about 180 places in open-air schools for tuberculous children, and 750 places in general open-air schools. In addition there is a certain amount of miscellaneous provision in general and special hospitals. With regard to new accommodation required, it may be convenient to consider provision for cases of (a) pulmonary tuberculosis; (b) tuberculosis of the bones and joints; and (c) glandular and other forms of tuberculosis.

(a) Children suffering from pulmonary tuberculosis should, whenever practicable, be sent to residential sanatorium schools. The Committee are advised that some 250 additional beds for this class of case should be provided at the outset. (b) Children affected with osseous tuberculosis should be sent to residential sanatorium schools equipped with all necessary appliances for conservative surgical treatment. At present the accommodation for these cases is very inadequate. To begin with, at least 2,000 additional beds are needed. (c) Glandular and other forms of tuberculosis should mainly be dealt with by means of open-air schools, playground classes, night camps, etc. It is urgently necessary that accommodation of this character should be considerably extended and made available throughout the country. Such institutions should also deal with the large number of children who are suffering as a result of conditions and from ailments which, if neglected, are likely to lead to the development of tuberculosis.

The nature of the residential institutions which should be provided should, in the main, follow the general lines, laid down in this report, for such institutions for the use of adults. The Committee consider that separate institutions, or, at least, separate pavilions or departments, should be provided for children.

As to the correlation of Children's Institutions with the General Scheme, it is shown that children of school age in attendance at elementary schools are under the supervision of the local education authority. They are subject to a periodical medical examination as part of the routine of their school life. It is obvious, therefore, that local education authorities have the opportunity of playing a very important and, indeed, essential part in the detection, prevention, and treatment of tuberculosis. In order to link up the local education authority with the scheme already indicated it is desirable that the school medical

officer should be closely in touch with the tuberculosis dispensary. The dispensary should provide, as far as possible, the same services for children as for adults.

Administration in England and Wales.

With a view to securing prompt and effective concerted action and a common trend of effort, it is recommended that the Government departments concerned, such as the Local Government Board and the National Health Insurance Commissions, should make, as has been done by other Government departments, mutual arrangements in some convenient form whereby important questions arising under the Insurance Act affecting the administration as to tuberculosis should first be considered jointly by representatives of the departments concerned.

The system should be so organized as to secure (*a*) that every person suffering from tuberculosis, whatever the form of his disease, and whatever authority or body may be liable, or may have undertaken, to bear the cost of its treatment, should receive the treatment appropriate to his condition; and (*b*) that in the interests both of economy and efficiency unnecessary multiplication of offices and institutions, and overlapping and conflict of authorities, should be as far as possible avoided.

Having regard to the different classes of institutions which are required, to the variety of the cases to be dealt with, and to the proper organization of comprehensive, efficient and economical schemes, the County and County Borough Councils are to be held primarily responsible. The Committee are of opinion that the unit area should generally be that of the County, County Borough, or in some cases a group of Counties and County Boroughs, and that the organization of schemes will best be carried out if undertaken by the County or County Borough Council or in cases of combination by a Joint Committee of these bodies (or possibly of one or more of such bodies with other local authorities). While the Council or Joint Committee should be the body legally responsible for the provision and maintenance of the institutions required, the Committee consider that in formulating a complete scheme for an area, they should consult in reference thereto the other Sanitary Authorities and also the Insurance Committees which are interested. The Committee are of opinion that these bodies, recognizing the services that have been rendered in the past by voluntary effort should encourage the continuance of such services by making the utmost use of the provision which private liberality has made available. Every endeavour should be made to include in the local scheme institutions and associations which are carried on by private effort. As regards London, it seems desirable to the Committee that

it should be considered whether some of the sanatoria and hospitals should not be provided by the Metropolitan Asylums Board, and whether dispensaries should not be provided by the Metropolitan Borough Councils.

It is clearly recognized that Sanitary Authorities are the bodies primarily concerned in the administration of the public health laws of this country, and they must occupy an important position in any general scheme dealing with tuberculosis. It is they who receive notifications of cases of pulmonary tuberculosis, and it is the duty of their Medical Officers of Health, on receiving notifications, to take such steps as may appear to them to be necessary or desirable for preventing the spread of infection and for removing conditions favourable to infection. Some Sanitary Authorities have already provided beds or hospitals which are being utilized as sanatoria for consumptives, and in this and in many other ways these bodies are actively engaged in assisting in the control of tuberculosis. It is, therefore, clearly desirable that the schemes which are to be organized by County Councils should be so framed as to secure the co-operation of Sanitary Authorities to the fullest extent. It is not possible to lay down in precise detail how such co-operation should be secured. The circumstances of different counties vary, and the formulation of particular schemes must take account of such variation. But it will probably be found expedient, when any of the larger Sanitary Authorities are already providing or are prepared to provide any of the institutions or other parts of the contemplated machinery, that those authorities should be given due place in the Committee controlling or advising the arrangements. As a general rule the formulation of a county scheme will rest, in the first instance, with the County Medical Officer of Health, and he will no doubt ascertain what are the needs of the county, and what existing arrangements, whether those of sanitary authorities or the voluntary organizations, can properly be incorporated in the scheme. The Committee are inclined to think that, subject to proper arrangements being made with such Sanitary Authorities as are prepared to carry out, as above indicated, any portion of the scheme, it will generally be desirable that the County Council should be responsible for the provision and maintenance of institutions, including tuberculosis dispensaries, and that any accommodation which is provided by other authorities, and which is utilized as part of the county scheme, should be so utilized under the responsibility and direction of the County Council. One distinct advantage from the use of the county rate would be that so much of the expenditure as was thus met could be made to fall equally over the whole county.

It is suggested that the Insurance Committees will have the following duties: (a) That of securing prompt official notice whenever

suspicion arises that an insured person (or possibly a dependent) is suffering from tuberculosis. (b) That of obtaining proper evidence as to whether such person is in fact suffering from tuberculosis. (c) That of deciding whether such person, if found to be suffering from tuberculosis, shall receive "sanatorium benefit." (d) If it be decided that he shall receive "sanatorium benefit," that of deciding what form of treatment he shall receive, and with what person or authority the Committee shall make arrangements with a view to his receiving suitable treatment, and of making the necessary arrangements.

The duties of the Committee under (a) and (b) are chiefly medical, and must be discharged by making suitable arrangements with medical practitioners for reporting cases to the Committee, and for making the confirmatory diagnosis when required. The duties under (c) involve both medical and financial considerations. If the necessary funds are available the Committee may be able to act upon the principle that all cases of tuberculosis occurring in insured persons shall receive "sanatorium benefit." If the funds are insufficient for this, some discrimination must be made, and such discrimination must be based chiefly upon medical grounds. In other words, the Committee must be advised by a medical expert in its exercise of this discrimination. The Committee must also act under medical advice in deciding to what kind of institution, if any, a given patient should be referred, or whether he should be treated in a dispensary or at home. When a Council has established a scheme in full working order, a large proportion of the patients to be treated by and in the institutions it has established will consist of persons referred to it by the Insurance Committee, for the cost of whose treatment that Committee is responsible. When an Insurance Committee is performing its duties under the Insurance Act, it will look mainly to the County or County Borough scheme for the provision of institutional and dispensary treatment for those whom it recommends for sanatorium benefit. The Committee are of opinion that the point of contact between the two bodies should be the tuberculosis dispensary. The chief tuberculosis officer of the dispensary would seem to be the person best qualified to advise Insurance Committees in the discharge of such of their duties relating to persons suffering from tuberculosis as involve medical considerations. When institutional treatment is necessary he would be able to take or advise the right steps, since he would be in close touch with the available institutions in the county scheme; where treatment other than in an institution is necessary, he would be able to assist in giving it efficaciously through the dispensary. The Committee recognize that the disposition of Insurance Committees to make full use of the medical staff of the dispensary in the manner which is above indicated may be largely dependent upon some measure of control being given

to them over the personnel and working of the dispensary. It appears to the Committee, however, that satisfactory arrangements for the combined use and control of the dispensary might well be made by arrangement between the two parties concerned. The Committee are of opinion that, for the reasons above stated, the bodies legally responsible for the establishment and maintenance of the tuberculosis dispensary should be the Councils, but they suggest that arrangements should be made whereby, in view of the payments that would be made by Insurance Committees (under agreements for a term of years) towards the expenses incurred in connection with the dispensary in respect of the Committee's patients, the Councils might agree to be guided, in matters appertaining to the staffing and internal management of the dispensary, by the advice of a consultative committee consisting of members of the two bodies appointed by the respective parties in some agreed proportion. Voluntary bodies of an approved character specially interested in tuberculosis might suitably be given representation on this consultative committee.

The case of Wales, Scotland, and Ireland receives special and detailed consideration.

As regards the case of Ireland, the Committee consider that it is necessary, in order to deal effectively with tuberculosis in Ireland, to provide without delay for (a) the compulsory notification of pulmonary tuberculosis in all districts in Ireland; (b) entrusting County Councils with administrative functions for dealing with public health, and for the appointment of County Medical Officers of Health; and (c) the medical inspection and treatment of school-children, which should be provided by means of a Government grant. The Committee consider that a fixed proportion of the grant of £145,000 to Ireland should be earmarked for providing for the institutional treatment of tuberculous children. The higher incidence of tuberculosis in Ireland amongst children of the school age renders it imperative that adequate provision should be made for dealing with this aspect of the question, for if this matter is not adequately dealt with, it may result in throwing upon the insured ages a large number of medically unfit persons, and thus upset the actuarial calculations upon which the finance of the National Insurance Act is founded. The Committee are also of opinion that, so far as it may be found practicable, aid from the grant may be afforded to those voluntary institutions which are found to be doing good work in the treatment and prevention of tuberculosis, and which are willing to provide further accommodation for the treatment of tuberculous patients.

Finance for the United Kingdom.

In dealing with the question of finance in relation to the provision of new and additional accommodation, the Committee desire to state that any figures which are given in their Report must be taken to be extremely tentative and provisional. The extent to which new and additional accommodation will be required depends upon a number of factors which it has not been possible for the Committee to ascertain with any degree of accuracy. Among these factors are—(1) the extent to which existing accommodation is, or may become, available to meet future requirements ; (2) the probable number of patients in the different stages of the disease ; (3) the degree to which these patients will respond to treatment ; (4) the extent to which insurance committees and other bodies may decide or be advised to give institutional as distinguished from other forms of treatment. It has not as yet been found possible to ascertain the first of these factors, nor do the Committee feel in a position to make a reliable forecast as to the remaining three. The Committee, however, anticipate that, before distributing the capital sum made available by the Finance Act, 1911, and before approving schemes in local areas, the Local Government Board will take such steps as may be necessary to collect information as to existing accommodation. Of tuberculosis dispensaries some 225 to 300 (dispensaries or their equivalent staff) will probably be required for the United Kingdom. Allowance must, however, be made for sparsely populated areas for which other and special arrangements may be needed. An existing building should, as a general rule, be adapted for a dispensary, and the Committee think that from £250 to £350 should suffice to cover the capital expenditure for the alteration and equipment necessary. Of sanatoria for adults, on the basis of the provision of one bed for every 5,000 inhabitants, some 9,000 beds will be necessary at the outset for the United Kingdom, including such existing sanatorium beds as may be suitable and available. The cost of the additional accommodation necessary may probably be estimated at £150 per bed, on an average, including the cost of the land and of the administrative section.

Of hospital beds, the Committee cannot at present suggest any figures beyond making a rough estimate that, in addition to Poor Law beds, some 9,000 beds would seem to be required for the purposes of observation, treatment, education, and isolation. How many of these 9,000 beds will require to be provided depends upon the number of available beds already in existence which are not now being utilized for the treatment of tuberculosis.

As to beds required for non-pulmonary forms of tuberculosis, the Committee postpone consideration to their Final Report.

The case of children is to be further considered, for the Committee, realizing the importance of undertaking the systematic treatment of children, propose to recommend in the Final Report that a definite sum should be allocated for the provision of the necessary institutions.

The following are the financial recommendations of the Committee :
(1) That, with a view to encouraging the early provision and equipment of tuberculosis dispensaries, capital grants should be made up to four-fifths of the amount required, provided that this sum should, generally, not exceed £1 per 750 population, or an average of £240 per dispensary.
(2) That, for the provision of the additional sanatorium beds for adults required at the outset, capital grants should be made up to three-fifths of the cost per bed, provided that the total sum does not exceed an average of £90 per bed. (3) That grants should be made for beds other than sanatorium beds. Owing to the lack of information at present at their disposal, the Committee cannot in this report suggest what amount of capital outlay for these beds should be provided out of the Parliamentary grant. They can only recommend that in the making of these grants the same general principles should be observed as in the case of sanatorium beds.

With regard to maintenance, it is suggested : (1) That Insurance Committees, when they are formed, should make agreements with the governing bodies of sanatoria, hospitals, etc., for the maintenance of a fixed number of beds for a term of years. (2) That the payment of Insurance Committees to the governing body of the dispensary, in consideration of the treatment of patients for whom the Committees are responsible, should take the form of a lump sum paid annually under an agreement for a term of years. In cases in which, under such agreement, the medical staff at the dispensary act as advisers of the Insurance Committee in questions of diagnosis and recommendation for treatment, an additional annual payment should be made in consideration of such services. (3) That the payment to general practitioners treating persons under the scheme in consultation with the chief tuberculosis officers of the dispensaries should be on a scale agreed upon between the parties concerned, and that in respect of insured persons this payment should be in addition to the sums paid for medical benefit.

Summary of Principal Recommendations.

Finally, the Committee epitomizes their suggestions in the following precise form : (1) That schemes dealing with the whole population should be drawn up by Councils of counties and county boroughs,¹ or

¹ In Scotland by the Councils of counties and, in burghs with a population of 20,000 and upwards at the census of 1911, by the Town Councils.

by combinations of these bodies at the earliest possible date on the lines recommended in this report, with due regard to the incidence of the disease and the special conditions and circumstances of the area.¹ (2) That the early establishment in working order of an adequate number of tuberculosis dispensaries is essential. (3) That, so far as possible, grants in aid of tuberculosis dispensaries should only be given where such institutions will eventually form constituent parts of complete schemes. (4) That, in framing complete schemes, regard should be had to all the existing available authorities, organizations, and institutions, with a view to avoiding waste by overlapping, and to obtaining their co-operation and inclusion within the schemes proposed. (5) That special regard should be given to securing the co-operation of medical practitioners in the working of the schemes, particularly in relation to the early detection of the disease and its domiciliary and dispensary treatment. (6) That special attention should be paid to securing suitably qualified and experienced medical practitioners for the senior appointments in connection with institutions established, as the ultimate result obtained by the treatment recommended must depend to a great extent upon their medical and administrative qualifications. (7) That, in erecting or adapting institutions, local authorities and other bodies should avoid pretentious and extravagant buildings, and should aim rather at providing institutions of a simple and inexpensive character. It would seem desirable that provisions similar to those of Section 3 of the Education Act, 1911, should be made applicable, and that due regard should be had to any town-planning schemes. (8) That inasmuch as the opportunities which are now afforded in general hospitals to students of medicine for the observation of the course and treatment of tuberculosis are insufficient to secure provision of an adequate number of expert medical officers, advantage should be taken of the extended opportunities which will be afforded under the proposed scheme to obtain additional instruction.

¹ In its application to Wales this recommendation should be read subject to the modifications which may be rendered necessary owing to the existence of the Welsh National Memorial Association.

A COLLECTION OF REPRESENTATIVE OPINIONS
ON THE INTERIM REPORT OF THE DEPART-
MENTAL COMMITTEE ON TUBERCULOSIS.

FROM FRANCIS E. FREMANTLE,

M.A., M.CH., M.B., F.R.C.S., F.R.C.P., D.P.H.,

Medical Officer of Health and School Medical Officer for the County of Hertford ;
Author of "Health and Empire," etc.

Tubercle is a foe worthier of our steel at the present than all other diseases put together. With funds and driving power behind us, we must concentrate on it for the next few years. The Astor Committee Report is an excellent interim statement, suggestive, elastic, sufficiently definite for preparation of a practical scheme. I regret it does not fully appreciate the modern physiological view of open-air and graduated labour: the latter does everything; the former, except as a muscular stimulant, nothing. Open air is of supreme value only as, with its common adjuncts, the chief incentive to natural exercise, naturally adapted to individual powers. Shelters, without the supervision of experts in modern antituberculous methods, are frauds. A sanatorium is therefore the central need. The estimate given of 1 bed to 5,000 of population is considerably below that suggested by this year's notifications. If adopted, smaller progressive counties can still build the minimum one hundred and lease beds to other smaller authorities.

For the direction of the dispensary, the Report rightly lays stress on the officers, not on the building. A special building is probably inadvisable except in large towns. The District Council office should be headquarters, and the tuberculosis officer should only visit patients at their homes, thus saving patients *ungraduated labour* of journey, treating surroundings and habits of patient, observing possible "contacts," and meeting district nurse and medical attendant. "Dispensary" is a misnomer, except in large towns.

Between hospital and sanatorium cases no line can be drawn; and there is no medical reason to divide them equally, as in the Report. Only one-fourth of all cases should be absolutely excluded from sanatoria, which will be the most attractive.

We require a basis of payment for use of these beds as between the responsibilities of Insurance Committees, County Councils, and District Councils. We want a more definite pronouncement of epidemiological safety of tuberculous patients in well-managed isolation hospitals. Pauper beds ought to be reckoned as a definite provision for a proportion of the tuberculous, especially in the counties.

The County Medical Officer must be the administrative head of the whole Public Health Department of the County Council undertakings. The present moment offers a grand chance for co-ordination of public health effort.

FROM W. J. R. SIMPSON,

C.M.G., M.D., F.R.C.P.,

Professor of Hygiene in King's College, London, and Lecturer in the School of Tropical Medicine.

Asked to express my opinion on the Interim Report of the Departmental Committee on Tuberculosis, I have no hesitation in stating that, in view of the terms of reference, it is a most able and illuminating document, reflecting much credit on its authors. It brings out very clearly the powers that existing authorities possess and the many voluntary agencies at work connected with the treatment and limitation of the disease. It, moreover, recommends a scheme for working on a national basis the dispensary and sanatorium systems which have come into being in recent years and the co-ordination as far as possible of the forces which are now at work. All this is well.

But it seems to me it did not need a National Insurance Act to secure these. For years the tendency has been in this direction. Recommendations of a similar kind could have been made, and would likely have been made, if there had been no Insurance Act. They would have come probably in a modified form, as a natural extension of the functions of the Public Health service, and instead of Insurance Committees, we should have had a strengthening of the preventive forces of the country. The appointment of Insurance Committees only complicates the machinery of prevention and adds another of those numerous authorities which serve to muddle and paralyze administration. It does more than this. Treatment is likely to bulk largely with the Insurance Committees as the most important aspect of the problem. Much money will be diverted to that object which might be better spent in perfecting those hygienic measures which have led since 1838 to the steady and remarkable decline in respiratory diseases. While appreciating the great value to be derived from dispensaries and sanatoria, I am inclined to think that, for the purpose of permanently reducing tuberculosis in its various forms, their powers are very limited, and I would, while using them, prefer to concentrate attention on the fresh-air treatment of the healthy, on housing, milk-supplies, and other well-known agencies.

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FROM JOHN CLOUGH THRESH,

D.S.C., M.D., D.P.H., F.I.C.,

Medical Officer to the County Council of Essex; Lecturer on Public Health, London Hospital Medical School; Late Examiner in Hygiene of the University of London; Author of "Water and Water Supplies," etc.

In this county the Interim Report of the Tuberculosis Committee has received considerable attention, and on the whole its conclusions are approved. Whilst the Report is most emphatic as to the necessity for securing the fullest possible co-operation of the sanitary authorities, it recommends that practically everything shall be done by the County Councils. This is regarded as a grave mistake. If the County Councils manage and maintain both sanatoria and dispensaries, there will be little left of local interest, and unless local interest is aroused the best possible results will not be secured. At the same time, the County Council should have some measure of control to secure uniformity of administration and a satisfactory degree of efficiency. The County Council should accept the responsibility of dividing the county into suitable areas for dispensary purposes and of providing such dispensaries if the sanitary authorities within the area do not combine together and undertake to provide and efficiently manage them. Where a satisfactory joint committee is formed, representing all the authorities in an area, then the County Council should delegate all their powers to such committee.

In any case, the County Council should provide the sanatorium or sanatoria; and the cost of maintaining this, after deducting the payment for insured persons, should be a county charge. I estimate that for our population of 1,000,000 nine dispensaries will be required, and that each will cost about £1,750 a year to maintain. After allowing for payments made by the Insurance Committee, the total annual cost to the county for sanatoria and dispensaries will amount to a rate of 1½d. in the £. The benefit which must result will be almost incalculable. Probably no Report ever issued has had such an influence upon the direction of Public Health administration as must result from this Report of the Tuberculosis Committee. I think the members should be most heartily congratulated on the result of their labours.

FROM GEORGE REID,

M.D., C.M., D.P.H.,

Medical Officer of Health to the Staffordshire County Council; Author of "Practical Sanitation."

The Report is a highly interesting and valuable document which will be of great service to those authorities who have to make provision for the prevention and curative treatment of tuberculosis among the general population as well as among insured persons. It will strengthen

the hands of the officials who have to advise the authorities as to the nature and scope of the machinery which will be required. The wide definition given to the term "sanatorium benefit" will be appreciated by those who do not advocate the systematic retention for lengthened periods in sanatoria of persons of the artisan class, but who look upon the object of such treatment as being largely educational and preparatory to dispensary and domiciliary treatment. The unfortunate term "sanatorium benefit," unless so defined and safeguarded, might, in the case of insured persons, lead to extravagant expectations which could not be met except at a cost which the results would not justify.

The Report very wisely indicates that the authorities (the County Council, County Borough Council individually, or in certain cases jointly) should be responsible for the provision and administration of both units, the sanatoria and the dispensaries, and points out that through the latter the whole machinery could be linked up in order to secure the co-operation of local sanitary authorities, medical officers of health of the constituent districts, medical practitioners, and voluntary preventive local organizations.

The publication of the final Report, which will embrace suggestions as to the expenditure of the fund available for research work, will be awaited with interest.

FROM JAMES R. KAYE,

M.B., C.M., D.P.H.,

Medical Officer of Health for the West Riding of Yorkshire; Medical Adviser to the Local Educational Authority; Author of "The Prevention of Infectious Disease," etc.

I welcome the Interim Report of the Departmental Committee, because it provides a wide and strong foundation on which to erect an all-round defence against tuberculosis. Organized effort rigorously carried out will accomplish results encouraging to the administrators and valuable to the community, whether in the home, the school, or the workshop. The present methods of localized activity have produced good work, but will be out of comparison, we hope, with a national attack and defence against the White Man's Plague.

With a scheme as suggested, at once so gigantic and so comprehensive, there will be necessarily some trimming to dovetail it harmoniously with actual experience. Having regard to the hurried preparation of it, I look upon the scheme as quite satisfactory, not only in its financial aspects, but also in the methods indicated to secure co-operation throughout the Health Service, and invigoration of the various authorities in their dealing with the Acts, such as the Education

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(Administrative Provisions) Act and Housing and Town-Planning Acts, and, of course, not omitting the Public Health Act of 1875, to which sanitarians owe so much.

FROM THOMAS D. LISTER,

M.D., M.R.C.P.,

Physician to Mount Vernon Hospital for Consumption; Hon. Advisory Physician to the Council of the National Association for Establishing Sanatoria for Workers; Author of "Phthisis as an Industrial Disease."

The Interim Report is a brilliant compromise. Little exception could be taken to the composition of the Committee, which surely represented sufficient shades of opinion, *pace* the eugenists. Indeed, to have achieved unanimity in the signatories betokens skill, tact, urbanity, and amiability of a very high order on the part of the Chairman (Waldorf Astor, Esq., M.P.). The key to this Interim Report is perhaps given in the sentence on p. 11: "The aim should be that no single case of tuberculosis should remain uncared for in the community, and that whatever services the scheme provides should be available for all cases of the disease." The impression given is that an attempt to bring into line the many points of view of the constituent members of the Committee could have had no other result than such a report. What one feels that is lacking is a masterly grip of the problem. No doubt the final Report will show broader and deeper views, and possibly some predominating mind on the Committee may then succeed in giving system and coherence to the many tentative and often merely advisory recommendations that appear at present. Too little attention, however, is given to the facts that the primary recognition (but not diagnosis) of disease is due to the patient, that the primary diagnosis of tuberculosis is too often impossible in the present state of medical education (and in the present state of medical practice), and that heredity, occupation, and environment, and all that the latter implies, are factors of enormous importance in determining the "condition and degree of activity of the defensive forces of the body."

Too much care has been taken to endeavour to suggest methods of co-operation among existing agencies and existing methods. Such agencies and methods are largely the result of the last few years' work. The former multiplicity of medicines has given place to the modern multiplicity of measures. A study of the history of the disease such as that made by Sanarelli for the recent Rome Congress, or such as that made in the beginning of the Local Government Board Report on Sanatoria issued by Mr. John Burns in 1906, might have given a stronger line and greater cohesion.

The progress of sixty or one hundred years is lost sight of in the claims to recognition of the prominent workers in special but limited fields. No factor is of greater value in the bedside consultation of experts than the elimination of the prejudices and errors arising from individual experience. Too much agreement is liable to be bad for the patient. First principles should emerge from the clouds of personal opinion. Surely this should also be true in so great a matter as the "consideration of general policy in respect of the problem of tuberculosis in the United Kingdom in its preventive, curative, and other aspects, which should guide the Government and local bodies in making or aiding provision for the treatment of tuberculosis in sanatoria or other institutions, or otherwise."

The Report bears the impress of lack of commanding personality; the recommendations made, though useful, suggest that limited time made an agreeable compromise necessary, and the present result of the Committee's labours resembles a tree which is all branches and no trunk. We shall await the final Report with interest.

FROM A. K. CHALMERS,

M.D., C.M., D.P.H., F.F.P.S.,

Medical Officer of Health to the City and Port of Glasgow; Author of "The Distribution of Tuberculous Disease."

The Report emphasizes anew the need for clear thinking in connection with the sanatorium provisions of the Insurance Act. Are they to be applied to the *treatment of consumption* or the *prevention of tuberculosis*? This latter is the term used in the Act, but "sanatorium benefit," in the case of persons insured under it, will largely mean the treatment of tuberculosis of the lungs, while its extension to their dependents will give prominence to the other forms of tuberculous disease. Questions of finance may limit the extension, but there can, I think, be no question as to its desirability.

Next in order, although equal in importance, is the question, Through what authority are the provisions to be applied? "Any scheme which is to form the basis of an attempt to deal with the problem of tuberculosis . . . should be available for the whole community" (Report, para. 4 [1]). The intention of this seems clear enough, but in subsequent paragraphs the Report would appear to contemplate the creation of two independent authorities for realizing it. One will be a tuberculosis officer, who will direct the application of the measure to persons included within the Act, and another the local authority, who will deal with the rest of the population. If this is seriously suggested, what will be the position of the tuberculosis officer with regard to "right of entry"? And in regard to the removal or amelioration of the

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conditions which, as para. 3 has it, "weaken the defensive forces and render the body less able to resist the infecting organism," what is to be the new officer's status? Local authorities have hitherto had no difficulty in staffing their Infectious Disease Hospitals with able clinicians, and this fact should influence their relationship to the tuberculosis officer.

The merits of the scheme are mainly concerned with *methods of treatment*, and but little with those of *prevention*; indeed, the Report is curiously lacking in this respect. Nevertheless, it gives reasonable indication of a desire to avoid overlapping among the several authorities interested, and a rigid adherence to this principle should clear away many of the difficulties. The provision of beds for "dispensary" purposes will do much to restore the consumption hospital to an active place in the scheme of institutional provision.

FROM WILLIAM ROBERTSON,

M.D., D.P.H.,

Medical Officer of Health to the Borough of Leith; Lecturer on Public Health at the Royal College of Surgeons, Edinburgh; Joint Author of "Sanitary Law and Practice" (3rd ed.), etc.

The Insurance Act, which comes into operation on July 15, comes as a blessing to the Medical Officer of Health, because it is going to force the country into administrative action. The one drawback is that slumbering authorities have been given little time to waken up to the importance and far-reaching effects of the provisions required. Already many Councils, taking time by the forelock, have provided means for dealing with cases of pulmonary tuberculosis. Notification has compelled that step. Now, however, the treatment of individual cases calls for decided effort. In this short contribution it is difficult to do more than outline a method which has been found by an experience extending over two years to yield astonishingly good results—results far outreaching those secured during the previous ten years, when, in addition to notification, domiciliary visitation, hyperaeration, rest, and good feeding were resorted to. The introduction of tuberculin has, in my experience, led to a vast improvement in the method for grappling with pulmonary tuberculosis.

The machinery is simple and effective: (1) A tuberculin dispensary, where patients are examined and treated. (2) Twenty beds at the isolation hospital in a special bungalow, where tuberculin and six weeks' residence are given. From the hospital suitable cases are drafted back to the dispensary to continue treatment, and allowed to return to work. (3) Our School Medical Officer sends all suspected cases to dispensary. From this centre cases are sent to hospital for

"test" doses and treatment. Treatment is continued at the dispensary after six weeks' hyperaeration at the hospital.

My conclusion is this: Tuberculin with modified sanatorium treatment enables one to get at early cases quickly, to lessen expense of residence in sanatorium, and to curtail the period of sick benefit, with far better outlook for permanent benefit than when only sanatorium methods are employed.

H. HYSLOP THOMSON,

M.D., D.P.H.,

Medical Officer of the Liverpool Sanatorium; Author of "Consumption in General Practice."

In reading the Interim Report on the general policy in respect of the problem of tuberculosis recently issued by the Departmental Committee on Tuberculosis, one is impressed by the wide scope and comprehensive character of the scheme outlined. To the tuberculosis student the chief source of satisfaction is that at last a definite and influential lead has been given to the practical co-ordination of the various forces which, according to our present-day knowledge, are necessary to the control and successful treatment of tuberculosis.

The first unit in the scheme recommended is the tuberculosis dispensary, and around this centre, in their positions of relative importance, are grouped sanatorium, hospital, and other institutions comprising the second unit. The function of the dispensary as a centre for diagnosis, observation, treatment, examination of contacts, after-care, and information on all points relating to tuberculosis, is clearly defined, and its importance is emphasized. One of the most important sections in the Report is that dealing with the classification of patients, and emphasis is laid on the fact that the variation in type so characteristic of pulmonary tuberculosis calls for discrimination in the methods of prevention and treatment.

The Report embodies in its recommendations the most modern views on the control and treatment of tuberculosis. It defines a clear general policy which makes for efficient unification of effort and the realization of long-hoped-for results. In future the stricken consumptive will receive the treatment which will most suitably meet his requirements. The early recognition and early active treatment of the disease will become the rule and not the exception, and, as the scheme matures, the advanced, neglected, and infective case, which is the *fons et origo* of the human bacillus, will become less and less a menace to public health.

With such a comprehensive scheme in view, combined with the fact that the resistance of the inhabitants of the United Kingdom to tuber-

culosis is gradually attaining a higher level, we may look forward with confidence to the day—as yet, however, somewhat distant—when tuberculosis as a serious drain to national life and health will have ceased to exist.

C. W. SALEEBY,

M.D., F.R.S.E., F.Z.S.,

Author of "Parenthood and Race-Culture," etc.

The Interim Report seems to me to be admirable so far as it goes. It need not be blamed for ignoring the only line of criticism which interests me as a Eugenist—namely, the argument of those who may, with convenient ambiguity, be called the "better dead" school, and who invoke, in the name of divine eugenics, the diabolic aid of the slum and the public-house to effect what they call "natural selection." The slum and the public-house are not natural. Further, I adhere to the teaching of many past years that, though the factor of susceptibility to tuberculosis is doubtless as essential as that of infection, no investigators, least of all the biometricians, have yet even begun to solve for us the difficult and important problem of duly appraising two distinct things—genetic or inherited and somatic or acquired susceptibility to the infection. I even deny that any real, definitive evidence of the importance of the genetic factor in susceptibility exists, notwithstanding the innumerable calculations which take no regard of infection or nurture. In a word, though I have preached eugenics for a decade, and believe it to be the cause of causes, I do not yet know that the problem of eradicating tubercle is any more a genetic-eugenic problem than that of eradicating leprosy, scarlet fever, or perhaps ringworm. This attitude of suspended judgment may be modified on the day on which evidence that discriminates between genetic and acquired susceptibility is laid before us. That day is, I fear, remote, as we still wait for any crucial work on the distinction between susceptibility (of whatever origin) and infection in this disease.

But one point seems clear, to which, perhaps, the Tuberculosis Committee may draw attention in its final Report. I believe the evidence to be overwhelming that alcoholism increases, or produces, susceptibility to this disease. The International Congress in Paris a few years ago passed a unanimous resolution to the effect that the fight against tuberculosis must everywhere be combined with the fight against alcoholism, and further formidable evidence was adduced at the Rome Congress. To say nothing of the average public-house as a proven plague-spot in this connection, what about the factor of the personal habits of the insured? Or do we propose to abolish tuberculosis while letting people behave as they like? The Insurance

Committee for England have already said that the insured, when ill, are not to do anything liable to retard their recovery. Is it proposed to make any suggestions—very politely and deferentially, of course—to the insured as to their habits when well? I suggest that the Tuberculosis Committee should refer to this question of alcoholic habits as "making the bed for tuberculosis," in the words of a great French physician, lest posterity should look back upon our present cowardice and stupidity, spending the national money like water in a sieve, with incredulous disdain.

FROM W. J. MORTON,

Secretary of the Mount Vernon Hospital for Consumption and Diseases
of the Chest.

The question as to the probable effect of the Insurance Act upon the financial welfare of the hospitals is not, at least in my opinion, a difficult one to answer. It is already taken for granted in many quarters that they will be adversely affected, and some anxiety exists lest voluntary contributors may withdraw their support in large measure, more especially as all employers of labour are compelled to contribute towards the insurance of their servants under the Act. There appear to be good grounds for this apprehension, for it can hardly be expected that subscriptions will be maintained under the new conditions, inasmuch as many will consider that they will thereby be contributing in a twofold degree towards the same object. More especially will this be the case in regard to the consumption hospitals; indeed, the process of withdrawal has already begun. If the country is to be covered by tuberculosis dispensaries and sanatoria supported by the State and the contributions of the insured, it is argued that there will be no need for voluntary aid. If this view of the position is premature, it is probably the right one, as past experience proves. The committees of the London chest hospitals are now losing support and find money difficult to obtain. Indeed, more than one of them is in debt to its bankers for the means to defray current expenditure. On the other hand, it is difficult to assume that there will be no room for existing institutions in the interest of public health under the new scheme of things. There are many grounds upon which it might be argued that they are a very necessary unit in any well-considered scheme to deal effectively with the tuberculosis problem. It seems, however, as if their future existence depends upon State aid. If that be withheld, there can be but one result. But when once the principle of State aid is admitted it will not be long before its extension to general hospitals becomes a *fait accompli*. The Interim Report must be considered with a full understanding of the possible and probable trend of events.

ORIGINAL ARTICLES.

IMPRESSIONS OF THE INTERNATIONAL CONGRESS ON TUBERCULOSIS.

By NATHAN RAW,

M.D., M.R.C.P.,

Physician of Mill Road Infirmary, Liverpool.

THE Tenth International Tuberculosis Congress was held in Rome from April 14 to 20, and was attended by over three thousand persons. The Congress was under the distinguished patronage of the King and Queen of Italy, who attended in royal state at the solemn opening in the Hall of the Capital on Sunday morning. The weather was, unfortunately, wet, and the arrangements for the function extremely bad, as could be judged from the fact that over three thousand invitations were issued by ticket into a hall which could only provide accommodation for, at the most, four hundred people. The result was very unfortunate, as, in addition to disorder within the building, a great number of ticket-holders were unable to gain admission. To those who were fortunate enough to obtain admission the ceremony was of a most interesting character. The revered and aged president, Dr. Baccelli, presided, and made a most interesting speech on the work which was being done in Italy to combat tuberculosis, after which each country in Italy was represented by a delegate who briefly mentioned the work which was being done in his own country. The work of the different sections of the Congress took place in the rooms attached to the Castle of St. Angelo, and were most unsuitable for the purpose, being small and badly lighted and ventilated. Fortunately, the weather was not hot, otherwise the accommodation provided would have been uncomfortable.

The serious work of the Congress was divided into three sections : (1) Social Measures against Tuberculosis ; (2) The Medical and Surgical Pathology and Therapeutics of Tuberculosis; and (3) the Etiology and Epidemiology of Tuberculosis. In addition to the sections, eight general conferences of the Congress were arranged to hear addresses on eight different subjects, one being by Dr. Philip, of Edinburgh. The Congress was preceded by a meeting of the International Tuberculosis Conference, which was held in the Salle Romano of the Castle of St. Angelo, from April 10 to 14. This Conference consisted of medical men only, who might be said to fairly represent the work which was being done in each country.

Human and Bovine Tuberculosis.

The most important subject which was down for discussion was the question of human and bovine tuberculosis. It will be remembered that at the last Congress, held in Washington, the memorable discussion took place on this subject, and on which Professor Koch maintained his position regarding infection from animals to man, when it was decided to continue the discussion at the Rome Congress. This discussion was eagerly anticipated, and was taken part in by several scientific workers. The position taken by Professor Koch was explained in a paper written by Professor Pannwitz, who drew up a statement on the voyage from America to Germany, and submitted it to the distinguished Professor for his approval. This opinion is briefly as follows: "Koch took the same position then as he did in London in 1910—that bovine tuberculosis can be transmitted to men, but that it very rarely causes serious disease. Koch contended that pulmonary tuberculosis in man—the principal manifestation of the disease with which preventative medicine has to deal—was not caused by the bovine, but by the human bacillus. He therefore desired that all activities should be concentrated on this. He objected to the campaign against bovine tuberculosis—necessary in itself for economic and agricultural reasons—being associated with measures against human tuberculosis. He never objected to the measures insuring the purity of milk and the products of milk, as milk is the medium through which many other infective diseases may be transmitted. He did object to these measures being placed in the foreground as having a bearing on the prevention of tuberculosis in man. Koch expressed his intention of undertaking further extensive investigations which aimed at proving the existence of bovine bacilli in human pulmonary tuberculosis with patients whose sputum could be examined over a considerable period of time. In his opinion the necessary investigations would be very laborious and expensive, and therefore could not be undertaken by small laboratories. In consequence, the only results that might be considered of value would be those of the Imperial German Board of Health and the British Royal Commission." The discussion was taken part in by the following workers, who read papers on the subject—viz., Messrs. Calmette (Lille), Kossel (Heidelberg), Sims Woodhead (Cambridge), Nathan Raw (Liverpool), Moellers (Berlin), Neufeld (Berlin), Malm (Christiana), and Rabinowitch (Berlin).

Professor Calmette read a most interesting paper, of which the following is a short résumé: (1) That there was no morphological distinction whereby we could differentiate the human from the bovine bacillus. (2) That culture methods give a useful indication as to whether the bacillus is bovine or human, but that their cultural characteristics are not sufficiently constant to enable a definite diagnosis

to be made. (3) The inoculation of various animals, such as rabbits, goats, and especially bovines, is at once the best method and of general application. In most cases the human tubercle bacillus is unable to infect the rabbit, even if the latter be inoculated with as much as 1 milligramme of bacilli from a fresh culture; 50 milligrammes of bacilli from a similar culture will not generally induce tuberculosis in cattle. If the udder of the goat be inoculated with a culture of the human bacillus, there only results a local infection which at most merely involves the neighbouring gland; whereas the bovine bacillus similarly inoculated will induce an extensive and lethal infection. If $\frac{1}{100}$ milligramme of bovine bacilli be injected intravenously into the rabbit, the animal develops generalized tuberculosis in the course of four to eight weeks. There can be no question, therefore, that the bovine bacillus is more lethal than the bacilli of the human type, when the latter is isolated from the sputum or from the lungs of a tuberculous subject. Guinea-pigs, cats, pigs, and most animals which suckle their young, are more sensitive to the bovine than to human bacillus. The one exception is the monkey, which shows sensibility to both types of bacilli. (4) Experiments made with a view to raising the virulence of the human tubercle bacillus to such a degree that it is capable of inducing a general and lethal infection in the bovines have yielded uncertain results. Yet, according to Eber, it is possible for certain bacilli of the human type to adapt themselves to the bovine organism, and they then show all the characteristics of a very virulent bovine type. (5) In the early years of life human beings may be infected with bovine bacilli. At post-mortem examinations on children who die of generalized tuberculosis, it frequently happens that the bovine bacillus is found in the infected glands. According to W. Parker, it appears that from the ages of 0 to 5 the percentage of cases due to bovine infection in proportion to the total number of cases of tuberculosis is 26·5 per cent., at the ages of 5 to 16 it is 25 per cent., while above the age of 16 it does not exceed 1·31 per cent., as out of all fatal cases of tuberculosis above this age 98·69 per cent. appear to have been due to the human tubercle bacillus. In chronic cases of pulmonary tuberculosis this latter bacillus is practically alone present. It may be asked whether the rarity of the bovine bacillus in pulmonary tuberculosis is not due to the fact that the bovine bacillus implanted in the organism during the early years of life, without producing a pulmonary infection until after the lapse of many years, has not actually slowly adapted itself to the human organism, and is thus transformed into the human type. Such a hypothesis is supported by Eber's attempt to transform the human bacillus into one which showed the virulence and characteristics of the bovine type. Up to the present, however, there is no satisfactory solution to the question. (6) It is

certainly an undeniable fact that in children from 0 to 16 years 75 per cent. of the cases of death from tuberculosis are due to the human bacillus, and in adults above 16 years of age 98·59 per cent. of fatal cases are due to the human bacillus. From the foregoing it is clear that for the prevention of tuberculosis we must prevent the infection of man, and, above all, the infection of the family, this without neglecting measures to protect children against a possible infection from milk. He considered that the principal source of danger to human beings was that they should occupy the same room as a patient with open pulmonary tuberculosis, as this frequently results in massive infection to which the best protected organism almost always succumbs.

Professor Kossel presented the view of the German workers, and he practically upheld the position taken by Koch, although he admitted that a small percentage of cases did occur. Professor Woodhead, of Cambridge, in an excellent paper, reviewed the work and conclusions of the Royal Commission in England, and showed conclusively that about 20 per cent. of tuberculosis occurring in children was the result of infection by bovine bacilli.

Dr. Nathan Raw, of Liverpool, followed, and as the result of his own work and experience supported the British view as to the amount of tuberculosis which was conveyed from animals to man. His conclusions are as follows: (1) It is not possible to accurately distinguish between bacilli of the human and bovine types by microscopical examination. (2) The cultural characteristics are not constant, although, as a general working rule, it is possible to recognize the different cultures. (3) The virulence of the different bacilli varies enormously, causing mild or severe reactions when injected into animals. (4) A large amount of tuberculosis in children under the age of twelve years is directly caused by bovine bacilli from milk. I estimate in Great Britain this amount to be about 15 per cent. of all cases. (5) In those countries where milk is not boiled the amount of surgical tuberculosis in children is greater. (6) With the rigorous inspection of dairy cattle the amount of surgical tuberculosis in children in Liverpool during the last ten years has, in my own hospital experience, been reduced by about 35 per cent.

The result of this discussion was, so far as any agreement was concerned, of an abortive character, and it was decided to hold a private meeting of those who took part in the discussion with a view of coming to some conclusion. This meeting was held on the following day, with closed doors, and was presided over by Professor Calmette. Professors Kossel and Neufeld firmly upheld Koch's view, whilst the British representatives, Woodhead and Nathan Raw, strongly urged the importance of the danger of bovine infection to man. At the close of the

discussion it was unanimously agreed to adopt the following resolutions : (1) Prophylaxis of tuberculosis must principally be directed against the suppression of contamination from man, and principally in the family. (2) The contamination of man by bovine infection is of less frequency ; nevertheless, it is necessary to maintain all measures against infection of bovine origin.

These resolutions were adopted unanimously, and it is believed that as a result the stringent measures to eradicate tuberculosis from dairy cows will be continued. It must be admitted that the result of these deliberations is most satisfactory, as there could be no doubt that the danger of bovine infection is now being widely recognized, the only difference of opinion now being as to the *amount* of such infection. These results were accepted by the Conference, and on being submitted to the full Congress in the following week, were also unanimously adopted as the finding of the International Congress, which is a matter of supreme satisfaction to the British representatives.

Specific Treatment.

The other work of the Congress was mainly centred on specific treatment of tuberculosis, and various speakers emphasized the importance of tuberculin. It was generally agreed that tuberculin was a most valuable remedy in the treatment of all forms of tuberculosis, but that its administration must be in the hands of careful and competent physicians, and that the case in which it is given must be carefully selected.

Sanatorium Treatment.

The work of the sanatorium was generally praised, and it was agreed by practically all the delegates that the results obtained in a well-equipped sanatorium, combined with tuberculin, were the best that could be obtained at the present time. The results of treatment were increasingly good, and it was strongly emphasized that the key to the situation in the treatment of tuberculosis was early recognition of the disease and prompt and prolonged treatment.

The Social Conference.

The British and American delegates were entertained to tea in the beautiful gardens of the British Embassy, and the British Ambassador, Sir Ronnel Rodd, graciously assisted by Lady Rodd, did all in their power to make the visit to Rome pleasant and successful. Their Majesties the King and Queen also received in private audience a few of the delegates representing the different countries. Altogether the Congress, although not by any means of a memorable or outstanding character, did good work, and demonstrated the extraordinary amount of interest and enthusiasm which is being taken throughout the civilized world in the suppression of tuberculosis.

BOVINE TUBERCULOSIS IN RELATION TO HUMAN DISEASE.

By W. G. SAVAGE,

M.D., B.Sc.,

Medical Officer of Health, and Chief School Medical Officer for the County Council of Somerset; Author of "Milk and the Public Health."

THIS very large question involves the consideration of two separate problems—the amount of human tuberculosis which is of bovine origin, and the prevention of human tuberculosis from bovine sources.

Amount of Human Tuberculosis Infected from Bovine Sources.

Data is steadily accumulating as to the extent of human infection from bovines, but we are not yet in a position to definitely state the exact

TABULATION OF THEIR OWN CASES.

Diagnosis of Cases Examined.	Adults 16 Years and over.		Children 5 to 16 Years.		Children Under 5 Years.		Total Cases.
	Human.	Bovine.	Human.	Bovine.	Human.	Bovine.	
Pulmonary tuberculosis	278	—	8	—	5	—	291
Tuberculosis adenitis (inguinal and axillary) ...	1	—	4	—	—	—	5
Tuberculosis adenitis (cervical) ...	9	—	19	8	6	12	54
Abdominal tuberculosis ...	1	—	1	1	—	3	6
Generalized tuberculosis (alimentary origin) ...	—	—	—	—	1	1	2
Generalized tuberculosis	2	—	1	—	12	4	19
Generalized tuberculosis (including meninges) ...	—	—	—	—	18	1	20
Tubercular meningitis ...	—	—	1	—	14	1	16
Tuberculosis of bones and joints ...	1	—	10	—	6	—	17
Genito - urinary tuberculosis ...	3	1	1	—	—	—	5
Tuberculous abscesses ...	1	—	—	—	—	—	1
Totals ...	296	1	45	9	62	22	436

percentage from this source. More or less reliable estimates may be arrived at from several points of view of which, in my opinion, the best is that based upon the determination of the types of tubercle bacilli present in human cases. The English Royal Tuberculosis Commission

¹ Double infection; both types isolated; child thirteen months old; the mesenteric nodes gave human type; meningeal fluid gave bovine type.

investigated 108 cases of human tuberculosis other than lupus, but the most extensive records are contained in the very important paper of Park and Krumwiede¹ and their assistants. These investigators determined the type of tubercle bacillus present in tuberculous material sent to them from different institutions and from a variety of sources, and examined regardless of the type of infection. The tubercle bacilli

COMBINED TABULATION, CASES REPORTED INCLUDING THEIR OWN SERIES OF CASES.

Diagnosis.	Adults 16 Years and Over.		Children 5 to 16 Years.		Children Under 5 Years.	
	Human.	Bovine.	Human.	Bovine.	Human.	Bovine.
Pulmonary tuberculosis	568	1 (?)	11	—	12	—
Tuberculosis adenitis (axillary or inguinal)	2	—	4	—	2	—
Tuberculosis adenitis (cervical)	22	1	33	20	15	20
Abdominal tuberculosis	15	3	7	7	6	13
Generalized tuberculosis (alimentary origin)	6	1	2	3	13	10
Generalized tuberculosis	28	—	4	1	28	5
Generalized tuberculosis, including meninges (alimentary origin)	—	—	1	—	3	8
Generalized tuberculosis, including meninges	4	—	7	—	45	1
Tubercular meningitis	—	—	2	—	14	2
Tuberculosis of bones and joints	18	1	26	—	21	—
Genito-urinary tuberculosis	11	1	1	1	—	—
Tuberculosis of skin	1	—	1	—	1	—
MISCELLANEOUS CASES.						
Tuberculosis of tonsils	—	—	—	1	—	—
Tuberculosis of mouth and cervical nodes	—	—	1	—	—	—
Tuberculous sinus or abscesses	2	—	—	—	—	—
Sepsis, latent bacilli	—	—	—	—	1	—
Total	677	—	99	33	161	59

Mixed or double infections, 4 cases.

Total cases = 1,042.

were all, in the first place, isolated by guinea-pig inoculation. In addition, they also tabulated the results of their own and seventeen other groups of investigators into one combined table. Their own results and the combined results are shown in the two previous tables.

This table shows that the bovine type of bacillus was only found in 1·3 per cent. of the adults, but in 25 per cent. of the children five to sixteen years, and in 26·7 per cent. of the children under five years of

¹ Park and Krumwiede: "Studies from the Research Laboratory, Department of Health, New York City," vol. v., 1910.

age. When the phthisis cases are excluded, the adult percentage rises to 7·3.

These investigations show that while pulmonary tuberculosis is almost invariably of human origin, a considerable proportion of the cases of other varieties of tuberculosis, especially glandular and intestinal affections in children, are infected with bacilli of bovine type, and derived from bovine sources. Whatever the exact proportion, it cannot be regarded as other than a serious menace to health.

Prevention of Human Infection from Bovine Sources.

Apart from exceptional circumstances, bovine infection to man is spread entirely from tuberculous meat and milk, including milk-products. Of these milk, and to a lesser extent butter, is by far the most important, and must be regarded as the main vehicle of infection.

The problem of the prevention of human tuberculosis of bovine origin involves two quite separate considerations : (1) The control and elimination of bovine tuberculosis ; (2) the prevention of human infection from material containing bovine tubercle bacilli.

The Control and Elimination of Bovine Tuberculosis.

The control of bovine tuberculosis is urgently required in the interest of agriculture, and quite apart from its relationship to human disease. The loss to the agricultural community from this disease is enormous.

The eradication of this disease amongst cows and oxen is admittedly an extremely difficult task, owing to the insidious nature of the disease and its extremely wide prevalence. The suggestion that all the cattle in the country should be tested with tuberculin, and all found tuberculous killed and compensation paid, is wholly impracticable since the amount of compensation required would be enormous, while no surety that the disease was extirpated could be arrived at, unless the animals surviving were all re-tested with tuberculin, and all imported animals regularly tested and re-tested. Apart from this, the killing of about 25 per cent. of all the milch cows in the country would cause a milk famine. All responsible veterinary authorities are united in advocating that measures for dealing with this disease must be on selective and preventive lines, operating somewhat slowly.

The best known method for the eradication of this disease is that of Bang, of Denmark. Delépine has advanced a modification of this method. In his method great importance is attached to the work of eradication not being confined to individual farms, or small groups of farms, scattered among other farms where tuberculosis is left entirely or partly unchecked. The principle of both these methods is the separation of the healthy from the diseased animals, and the rearing of a healthy non-infected stock.

Ostertag's method is based upon the elimination of all cases of "open tuberculosis" from dairy herds. Vaccination of cattle against tuberculosis has also been advocated and practised, but in actual practice it has not given satisfactory results. Space will not permit a full description of these methods.¹

The Prevention of Human Infection from Material Containing Bovine Tubercl Bacilli.

The eradication of bovine tuberculosis is a long and difficult matter, and many authorities have taken definite action to try and prevent tubercle-infected milk from reaching the inhabitants under their control. For this purpose special legal powers have to be acquired.

Such powers were first obtained by Manchester, and they are usually known as the Manchester Model Milk Clauses.

These special powers have been in force in Manchester since 1900,

TUBERCLE BACILLI IN MIXED MILK SAMPLES (PERCENTAGES).

	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.
Manchester ²	8·7	8·57	10·42	6·7	6·15	6·2	5·74	8·28	5·14	—
Liverpool, country samples ³	6·1	7·3	5·1	9·2	3·8	6·8	4·7	3·3	1·8	4·1
Liverpool, town samples ³ 0·6	0·4	0·8	1·5	0·4	1·4	1·5	2·0	—	1·4	
Sheffield, country samples ⁴	—	17·8	16·7	6·7	14·7	9·6	9·7	9·9	10·9	10·4
Birmingham, country samples ⁵ ...					Prior to 1908=14 per cent.			11·3	7·5	7·3
Leeds, country samples ⁶ ...	—	—	—	—	—	—	—	25·3	16·4	—
Sunderland ⁷	—	—	—	—	—	—	2·5	7·0	7·4	3·6
London (L.C.C.) ⁸ ...	—	—	—	—	—	—	—	11·6	10·4	—

and in other cities for considerable periods, so that it is possible to obtain an estimate as to how far they have succeeded in attaining the objects for which they were framed. These milk clauses require notification by dairymen of all cases of udder tuberculosis among cows in cowsheds sending milk into the city, and prohibit the sale of milk from such cows within the city. They give powers for collecting milk samples and additional powers of inspection for cowsheds within the city. Their essential and characteristic feature is, however, the power of inspection which they give of cowsheds and cows supplying milk into

¹ For a fairly complete description see the writer's book, "Milk and the Public Health," London : Macmillan and Co. 1912.

² Kindly supplied to me by Dr. Niven, Medical Officer of Health.

³ Medical Officer of Health Report, 1910.

⁴ *Ibid.*

⁵ Kindly supplied to me by Dr. Robinson, Medical Officer of Health.

⁶ Medical Officer of Health Reports, 1908, 1909.

⁷ Kindly supplied to me by Dr. Renney, Medical Officer of Health.

⁸ Medical Officer of Health, London County Council's Annual Reports, 1908, 1909.

the city, although themselves outside, whenever the city authorities suspect milk from such farms to be tuberculous. The inspection can be followed up by prohibiting the infected milk from being supplied within the city as long as it is dangerous. The effectiveness of these powers may be considered from two points of view:

(a) *Their Influence upon the Prevalence of Tubercle Bacilli in the Milk Supplied to the City Enforcing Them.*—The table on p. 171 shows some of the results obtained in certain cities.

The Manchester figures are the most important, as they deal with a very large number of samples, extending over a series of years.

The table shows that there has been some diminution in the percentage of tuberculous samples, but that apart from the first few years of working, it has not been continuous or very marked. During the first few years some of the worst offenders would doubtless be weeded out and warned off from supplying the particular city. The amount of tuberculous milk for Manchester drops to about 6 per cent., and to about 9 per cent. for Sheffield, and there it remains. No regular, consistent diminution in the infective quality of the milk is observable.

(b) *Their Influence upon the Prevalence of Udder Tuberculosis.*—The following table supplies some data:

Year.	Manchester. ¹		Sheffield. ²	
	Percentage of Farmers Sending Tuberculous Milk.	Percentage of Outside Cows Found with Udder Tuberculosis.	Percentage of Country Cows with Udder Tuberculosis.	Percentage of City Cows with Udder Tuberculosis.
1901	...	9·9	1·4	0·47
1902	...	10·4	2·5	0·31
1903	...	13·6	1·1	0·45
1904	...	9·1	0·6	0·59
1905	...	8·3	0·9	0·26
1906	...	7·7	1·05	0·14
1907	...	6·76	1·1	0·8
1908	...	9·34	0·9	0·9
1909	5·79	1·03	4·0	1·1
Average	...	8·6	—	2·3

These tables show that the percentage of farmers sending tuberculous milk to Manchester varied from 5·79 to 13·6, the average being 8·6. Except for 1908, there has been a steady, though not very marked, decline since 1903. In other words, there has probably been a moderate but steady diminution in the number of farms with cows suffering from open tuberculosis sending milk to Manchester.

As regards udder tuberculosis, the table shows no percentage

¹ From information kindly furnished by Dr. Niven.

² Report of Medical Officer of Health (Dr. Scurfield), Sheffield, 1909.

diminution in either Manchester or Sheffield. In Sheffield during 1909, the veterinary inspectors found as many as forty-two cows with tuberculosis of the udder, out of about 3,600 cows stalled in Sheffield City.

Judged from these two points of view, these special powers have (apart from their initial effects) only attained a moderate measure of success, as regards their effectiveness to protect the community obtaining them against the dangers of bovine tuberculosis spread by milk.

Several considerations, apart from actual results achieved, show that markedly beneficial results of a permanent character are not likely to accrue. Thus a consideration of the powers given, and the clauses themselves, show that they are essentially based upon an assumption which cannot be accepted without large reservations. The assumption is that the presence of tubercle bacilli in milk is due to the herd supplying the milk containing one or more cows affected with clinically recognizable udder tuberculosis, and if these cows are removed the danger ceases.

This assumption, in view of the findings of the Royal Commission on Tuberculosis, and of other investigators, cannot be accepted as true. In further support of this statement may be instanced the fact that in a considerable number of cases in which tubercle bacilli are found in milk, no cases of udder tuberculosis, which can be diagnosed, are found. Apparently the cow-keeper in such cases may continue to send unchecked his milk into the city.

Again, action along the lines of the milk clauses must fail to effectively deal with the whole problem, since they attempt to treat a symptom; they do not treat the underlying condition, bovine tuberculosis. Applied to special areas only, as already mentioned, they exert a practically negligible influence upon the manufacture of bovine tuberculosis (although they may divert its products to unprotected places) but merely deal with the small amount of it which comes under their special cognizance. If the clauses were universally applied they would no doubt be made much more effective, but even then the powers given are insufficient.

One of the greatest weaknesses of the clauses is the absence of powers to deal with a cow with udder tuberculosis when found. She is difficult to diagnose and a potent danger to mankind, and yet when the elaborate business of bacteriological examination and veterinary inspection reaches its fruition and a cow with a tuberculous udder is found, all the law mildly enacts is:

1. The cow owner must not keep or permit such cow to be kept in any field, shed, or other premises along with other cows *in milk*¹ under a penalty.

¹ The italics are mine. Apparently she may be kept with calves or cows now dry which will soon again be in milk.

2. The milk of such a cow shall not be mixed with other food, and shall not be sold or used for human food, and shall not be sold or used for food of swine, or other animal, unless and until it has been boiled.

In other words, the owner can banish the cow from other cows in milk and stop using her milk, and then he has fulfilled the whole of the law. There is apparently nothing to prevent him selling the cow with or without saying anything about the udder condition.

It is well-known that the powers granted are less than those originally asked for, and the slaughter of cows suffering from udder tuberculosis was one of the clauses which Parliament failed to endorse.

Practical Procedures.

In my opinion, while immediate action is required to deal with existing conditions, and to prevent tubercle bacilli being shed into milk from cows with tuberculous udders or clinically diagnosable tuberculosis, the real lines of prevention are to help and encourage the farmer and breeder to eradicate tuberculosis from their herds. The former is a necessary measure, but it is only a palliative.

There is no doubt that the community for its own interest and protection will have to financially assist the farmers in the fight against bovine tuberculosis. The present policy of inactivity, or of localized efforts to diminish tubercle bacilli in milk, can never do permanent good, and money can be better employed in other directions. There appears to be a good deal of difference of opinion as to the directions in which financial assistance should be given. In Denmark compensation is paid for cows slaughtered suffering from udder tuberculosis. I believe this is not a good investment for the community. We must aim at making it an economic necessity for the farmer to get rid of insanitary cowsheds and other conditions which breed tuberculosis.

All animals suffering from udder or advanced tuberculosis should certainly be slaughtered. It might be reasonable, and probably would be politic, if any general scheme of prevention is inaugurated, to pay compensation for such animals for perhaps the first two or three years, but after that, if any cows with advanced tuberculosis are found in cowsheds, the owners should be fined. Any compensation should be paid out of Imperial rather than local funds, otherwise the urban districts do not pay their share. All cows excreting tubercle bacilli, if not killed, should be branded so that they may never be used for milk production.

To find out such animals, an adequate staff of veterinary inspectors must be provided, while bacteriological facilities will have to be much more extensively employed. Assistance to farmers and breeders should

be in the direction of the free supply of tuberculin and the free services of veterinary surgeons. The public must also be educated so that they will be willing to pay more for milk guaranteed free from tubercle bacilli than for ordinary market milk.

It would be a decided advantage if at least a few farms supplying milk from non-tuberculous cows could be obtained for each large urban area such as they are doing in Birmingham.

CRITICAL REVIEWS.

THE PRESENT POSITION IN REGARD TO TREATMENT AND PROGNOSIS IN TUBERCULOSIS OF THE LARYNX.

By G. SECCOMBE HETT,
M.B. (LOND.), F.R.C.S. (ENG.).

Surgeon Laryngologist to Mount Vernon Hospital for Consumption and
Diseases of the Chest; Assistant Surgeon to the Ear and Throat
Department, University College Hospital, etc.

IT was formerly held by physicians that a patient with tuberculosis of the larynx was doomed to an early and distressing end. Later, when the question of local treatment came to be discussed, laryngologists were divided into two camps. The former, having diagnosed the condition, held that treatment was of little avail, and contented themselves with local application of lactic acid and sprays or insufflations, to attempt to alleviate the more distressing symptoms. The latter attacked the larynx vigorously by surgical measures, convinced that removal of the diseased parts was the efficient and proper treatment, and afforded a chance at any rate of the cure. There was a tendency, however, to neglect the necessity of considering the patient's chest condition and his resisting power in deciding on the measures to be adopted. Ill-advised surgical measures on patients unsuited to them gave bad results, and for a time brought local treatment into disfavour. We know now that tuberculous laryngitis is nearly always secondary to pulmonary tuberculosis, and that as the eyes are said to be the mirror of the soul, so do the laryngoscopic appearances give a very good idea as to the hold which the tubercle bacillus has on the patient, and how great or how small is his resisting power. It may be laid down as a general statement that if the chest condition is capable of being arrested, no patient ought to be allowed to die from tuberculous laryngitis, but, on the other hand, the chest condition will tend to relapse and the infection obtain the upper hand unless the larynx is efficiently treated. The modern tendency is to insist on the necessity of co-operation between the physician and the laryngologist in the diagnosis and treatment of these cases.

In my clinic at Mount Vernon Hospital, where all cases admitted for phthisis have the larynx examined as a routine, it is not uncommon to find that there is a laryngeal lesion which has produced no symptoms.

The converse is also true, that doubtful cases coming to the laryngologist for hoarseness frequently have the diagnosis confirmed by the physician who finds a hitherto unsuspected pulmonary lesion.

A recent work¹ gives an excellent account of the diagnosis, treatment, and prognosis of tuberculous laryngeal lesions. Sir St. Clair Thomson's book on diseases of the nose and throat² has a chapter on the subject which is well worth reading.³

At the meeting of the British Medical Association at Birmingham in 1911, the treatment of tuberculous laryngitis formed one of the subjects for discussion at the Laryngological Section.⁴ Opening papers were read by Dr. Dundas Grant, Dr. Watson Williams, and Mr. G. Seccombe Hett. These papers, with the ensuing discussion, furnish a statement of the most recent opinions of experts upon the subject. Treatment by tuberculin has been reported on favourably,⁵ and in my own experience has certainly seemed to give good results. It has, however, been used in conjunction with a sanatorium life, and local treatment where the latter seemed necessary.

Very slight laryngeal lesions in an advanced and rapidly progressive case give a bad prognosis; they are frequently sub-terminal infections. In other cases, where there is an extensive lesion of the larynx in a person with normal temperature and a chronic type of pulmonary lesion, surgical procedures of a radical type, such as removal of the epiglottis or arytenoids, can often be done with impunity, and achieve excellent results. Lesions of the vocal cords can frequently be arrested by absolute vocal rest for six months, if the chest condition be favourable. Tracheotomy is not now resorted to for insuring vocal rest, but only if asphyxia is feared. Enlarged arytenoids can often be reduced by deep puncture with the galvano-cautery, and should this fail, I have had excellent results by punching them out, and have never seen failure of healing of the wound.

Infiltrations without ulceration of the ventricular bands are best treated by successive deep-cautery puncture at intervals of ten days. Watson Williams finds submucous injections of service for infiltrative lesions. Superficial ulcerations of the vocal cords should be touched with the cautery. Curetting should be limited to large ulcers, and should be employed with caution so as to avoid providing a larger breach of surface than already exists. Where a tuberculous lesion is confined to the epiglottis, I have been much impressed by the results of removal of the body by punch forceps; and as in the case of the arytenoids, I have

¹ Lockard: "Tuberculosis of the Upper Respiratory Tract."

² Thomson, Sir St. Clair: "Diseases of the Nose and Throat." London: Cassell and Co. 1911.

³ References in both of the above works to current literature are very complete.

⁴ See *British Medical Journal* and the *Journal of Laryngology, Rhinology, and Otology*, 1911.

⁵ Wilkinson, Camac: *British Medical Journal*, November 26, 1910.

never seen the stump fail to heal where this was employed in suitable cases. Even in desperate cases the extreme dysphagia produced by the infiltrated and sloughing epiglottis has been at once relieved.

The accumulation of secretion in the larynx can be prevented by the use of an alkaline laryngeal spray, and this simple treatment often makes the patient much more comfortable and better able to cope with his trouble. Unnecessary coughing should be prevented, and where this is caused by irritation in the larynx, dry inhalations of creasote, carbolic, and chloroform, applied by means of a Burney Yeo's mask, worn for some hours at a time, is very efficacious. Equal parts of orthoform and anaesthesin, insufflated half an hour before meals, is recommended for the relief of dysphagia. It may be necessary to use a 10 per cent. cocaine spray for the same purpose. Injections of alcohol into the superior laryngeal nerve are useful to relieve pain in the larynx.¹ To show that the prognosis is not always desperate, even in severe cases of tuberculous laryngitis, I may perhaps be permitted to end by quoting the following case : A strong, athletic naval officer of twenty-seven was seen complaining of hoarseness of five months' duration, with some dysphagia. On examination he was found to have infiltration and ulceration of the epiglottis, swelling of the right arytenoid, and granulations on the right vocal process and vocal cord. He was also found to have lesions of both apices, and tubercle bacilli were abundant in the sputum. The temperature was 100° at night. He was put under sanatorium conditions, with vocal rest. The epiglottis was removed. Subsequently the arytenoid was punched out, and the granulations curetted by the direct method. Three applications of the cautery were made at intervals. Within a year he was able to return to his professional work in the navy, with chest and larynx arrested, and now, three years after, is in good health.

¹ Grant, Dundas : *Lancet*, June 25, 1910.

PERSONAL OPINIONS.

THE TUBERCULIN DISPENSARY.¹

By DAVID M. BARCROFT,
M.D. (EDIN.),

Physician to Margaret Street Hospital for the Prevention of Consumption; Clinical Assistant to Mount Vernon Hospital for Consumption and Diseases of the Chest.

THE scope of the tuberculin dispensary must depend in the first place on the relative value of tuberculin in the treatment of tuberculosis and secondly on the practicability of its application. A very large amount of valuable work in regard to these points has been and is being done on the Continent, in America, and in this country. An increasing number of tuberculins are in use, from which one may gather that none of them are altogether without serious drawback, also that good results have been obtained with each of them.

What can be fairly claimed for tuberculin treatment is that every case at a sufficiently early period is probably capable of having the resistance so much increased that the development of the disease may be arrested. Further, the exhibition of tuberculin in practically every non-febrile, or only moderately febrile, case will lead to a very marked diminution in the symptoms; particularly is this seen in the relief of dyspncea, diminution in cough and sputum, lessening of night-sweats, and so forth. Patients with advanced pulmonary lesions obtain such relief who could not obtain assistance from many of our in-patient hospitals on the ground that they are not likely to regain the ranks of the wage-earners. Many of these are actually back at hard work. This, it must be clearly understood, takes place without any rapid change in the physical signs. Only after following the cases for years can it be determined whether it is a temporary respite in many cases or whether in all it is the commencement of a complete arrest of the tuberculous process.

¹ In preparing this short expression of a "personal opinion," it is well to say that I am indebted to many published works, including the following:

Bandelier and Roepke: "Lehrbuch der Spezifischen Diagnostik und Therapie der Tuberkulose." Sixth edition. Wurzburg: 1911.

Sahli, Hermann: "Tuberculin Treatment." Translated by Christopherson. London: Bale, Sons, and Danielsson.

Riviere and Morland: "Tuberculin Treatment." London: Henry Frowde, and Hodder and Stoughton: 1912.

Fraser, A. Mearns: "Report on Sanatorium and Tuberculin Treatment." Portsmouth: 1911.

Fraser, A. Mearns: "National Insurance and the Municipal Control of Tuberculosis," *British Journal of Tuberculosis*, April, 1912.

Wilkinson, W. Camac: "Tuberculin in the Diagnosis and Treatment of Tuberculosis," Second edition. London: Nisbet and Co., 1912.

The great disadvantage of tuberculin treatment is that it is practically impossible to abolish reactions altogether, and commonly each case at some time in the course passes through a sensitive period, lasting, it may be, weeks, during which progress is slow, when all the experience, skill, and, I might add, courage, of the administrator and patience on the part of the subject are required. The patient ultimately emerges from this phase, and the doses can then be proceeded with in the ordinary sequence.

Looking at the subject from the point of view of public economy, there can be no cheaper method of treatment, as the patient can live at home while attending the dispensary twice a week. In the meantime he usually is able, and, when possible, is much better working at some light work. The main restriction he is under is that he must rest if his temperature rises. No great advantage can be claimed for any special diet or medicinal treatment, and it is obvious that the after-life of the patient at home is more likely to be satisfactory if the treatment has been conducted without accustoming him at a sanatorium to a regimen that cannot be continued at home.

It should be clearly understood that tuberculin is at the present time just as potent for good or ill as it was when first introduced, and it must therefore always be administered by a qualified man of experience.

The general basis of any calculation may with advantage be taken from the experience of Portsmouth, where the now well-known Tuberculin Dispensary is administered by Dr. Mearns Fraser, the Medical Officer of Health. It is of course obvious that when patients are seen so frequently as twice a week, and are doing well, it is quite superfluous to subject them to a minute physical examination each time they appear for their dose. Parenthetically I might mention that it is customary to examine cases doing well at the out-patient department of our best-known chest hospital as occasionally as once in three months. It is found practically that where there are two good nurses, as many as four or five cases are dealt with in a quarter of an hour, or, say, eighty in a day of four hours only. This means that a medical officer can deal with 240 cases, each case attending twice a week. It is a little difficult to say exactly what number of the total population such dispensaries will serve. If we take Mr. Lloyd George's figure that there are 500,000 tuberculous patients in this country, we must assume that very roughly 1 per cent. of the entire population has to be dealt with at the outset. But of course all tuberculous subjects will not be of the dispensary class, and the advanced cases with mixed infection will be dealt with otherwise, so that a fully equipped dispensary with one medical officer presumably would be required for a town of, say, 80,000 inhabitants. There would probably be material

for a dispensary open, say, two days a week in a town of 20,000 to 25,000 inhabitants. It is not possible to estimate exactly the cost per case, but if we assume that a patient attends for a year, and that a one-medical-officer dispensary costs £750 per annum to run,¹ the cost is about £3 per case. This figure roughly corresponds to that mentioned by Dr. Camac Wilkinson.² It is very doubtful if in the smaller towns tuberculin can be administered so cheaply; but even so it does not become an expensive method unless in country districts, where the element of the transport of the patients to and from the dispensary has to be reckoned in addition. It has been pointed out that in many cases which are in themselves suitable for tuberculin treatment the journey to the dispensary may be responsible for an auto-inoculation. One would hope that the prevalence of consumption in the remote districts is the outcome of ignorance, and that instruction in hygiene and the proper methods of avoiding infection would render the country districts as immune as the environment deserves.

Everyone must welcome the financial recommendations of the Interim Report³ recently issued, where the Commissioners have clearly shown their conviction that all this dispensary work can be undertaken without any lavish expenditure of public money, as was at one time foreshadowed. In it the position of tuberculin treatment as a part of the service of a tuberculosis dispensary has been quite clearly stated.

If we have the courage of our convictions, we must see that under the new Act, with the co-relation of all methods of investigation, treatment, and after-care, both official and voluntary, the decrease in the death-rate from consumption, which is already a marked feature of our vital statistics, will be more and more evident, and it is not a wild idea to look forward to tuberculosis at no very distant date being ranged alongside typhus fever and rabies and other conditions which have been virtually stamped out.

¹ See the figures given in the April issue (p. 92) of this Journal.

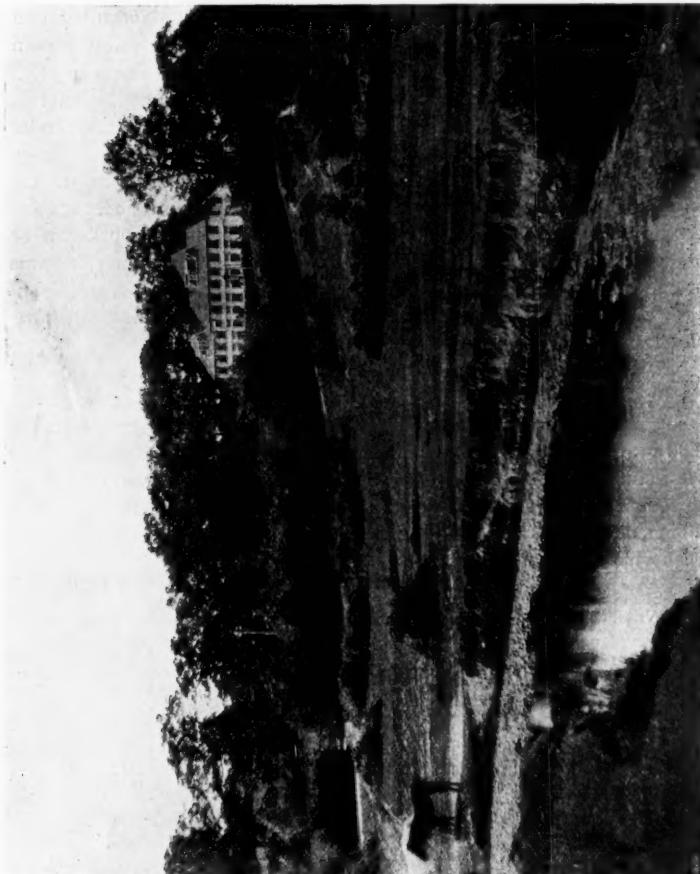
² Wilkinson, W. Camac : "Tuberculin in the Diagnosis and Treatment of Tuberculosis." London : James Nisbet and Co., 1912. See also *British Journal of Tuberculosis*, vol. vi., No. 2, April, p. 118, 1912.

³ Interim Report of the Departmental Committee on Tuberculosis. London : Wyman and Sons, Ltd., 1912. See also *British Medical Journal*, May 4, 1912.

INSTITUTIONS FOR THE TUBERCULOUS.

LINFORD SANATORIUM.

THIS sanatorium was one of the first to be specially designed for the treatment of tuberculosis in this country. It was built in 1898 by Dr.



LINFORD SANATORIUM.

R. Mander-Smyth, and as nearly as possible on the lines of Nordrach, in the Black Forest. Since its establishment the accommodation has been increased, until at the present time thirty-eight patients can be

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provided for. Dr. Mander-Smyth has been joined by Drs. Felkin and Snowden in the medical direction.

The sanatorium is situated in the extreme west of the New Forest, fifteen miles north of Bournemouth, but on higher ground, affording a more bracing climate both in summer and winter. Linford shares the advantages of the district, the chief of which are a large amount of sunshine, a sandy subsoil, and a moderate rainfall. The building occupies an open slope, faces south-south-east, and commands a wide prospect, and is within a stone's throw of great woods of pine and oak which extend for three miles to the north-east, thereby furnishing a variety of walks completely sheltered from all cold winds. In all other directions, and within easy access of the sanatorium, the broad valley expands to breezy moorlands rising to between 300 and 400 feet above the sea, providing a rapid transition to a region of distant views and more bracing air. Thus within a very short distance, the "season's difference" is to a large extent compensated for by this great variety of environment. The gradients of the slopes and the distances to all points surrounding the sanatorium have been accurately measured so that the character and amount of exercise is capable of exact adjustment to the strength of each patient.

For the later and more vigorous efforts of the invalid the whole extent of the New Forest is available, with its area of 150 square miles, forming a vast park with few habitations or highways, unique in its interest at all seasons of the year, and everywhere traversed by dust-free walks through the most varied and picturesque scenery.

The sanatorium buildings have been carefully designed to avoid the formation of dust or smoke, to allow patients while indoors to be practically in the open air, and to spare exertion to those in bed. Each room has large casement windows with fanlights opening outwards.

H. G. FELKIN, M.D.,
Resident Physician.

NOTICES OF BOOKS.

TUBERCULIN TREATMENT.

TUBERCULIN, it may be safely affirmed, has come to stay. The history of the introduction of tuberculin into therapeutics forms one of the most interesting and instructive chapters of modern medicine. We are still far from any clear understanding of the nature and action of tuberculin, but of its service in diagnosis and value in the treatment of many cases there can be no doubt. A new book on treatment by tuberculin has just appeared as the joint work of Drs. Clive Riviere and Egbert Morland.¹ It is a concise yet comprehensive study of principles and practices relating to tuberculin therapy. In well-arranged form and clear statement it epitomizes the best work on the subject in a manner which will be acceptable to the general practitioner, and of interest and service to the expert. As a practical, up-to-date, and reliable handbook this volume is at present without a rival. The authors are convinced of the value of tuberculin, and "the chief and central aim of their book is to take tuberculin treatment out of the field of doubt and controversy, and to place its principles and practice alike on a firm basis." The book consists of three parts, dealing respectively with the general lines of tuberculin administration, the method of immunization with tolerance (Koch), and the method of immunization without tolerance (Wright). Succinct descriptions are given of the best views and most reliable procedures of tuberculin therapy, and, as far as is possible, hypotheses on which they are built are lucidly explained. As a practical guide the volume may be commended without reservation. Particulars are given of the various forms of tuberculin available and their methods of preparation, and the well-arranged schemes for dosage will do much to clear away the prevailing confusion in regard to this important matter. As to the choice of a tuberculin, the following opinion is expressed: "We believe that T [Tuberkulin or Alt Tuberkulin, the old or original tuberculin of Koch] may and can be used on any and every occasion; but it is certainly easier to surmount the initial difficulties of dosage with T Bk [Tuberkulin Beraneck], and safer to use B E [Bacillus Emulsion] for febrile and highly sensitive cases." The question of ambulant tuberculin treatment is considered, and the view is expressed that such may prove suitable for (1) the early case of closed phthisis, where there is no danger of mixed infection, and no reason for sacrificing occupation or leaving home—primary ambulant treatment; (2) the case which has been at a sanatorium, but in which the tuberculin treatment has not been completed—consecutive ambulant treatment; (3) the case which really demands sanatorium treatment, but in which social or family conditions render this

¹ "Tuberculin Treatment." By Clive Riviere, M.D. (Lond.), F.R.C.P., and Egbert Morland, M.B., B.Sc. (Lond.), M.D. (Berne). Pp. xv + 277. London: The Oxford Medical Publications; Henry Frowde, and Hodder and Stoughton. 1912. Price 5s. net.

impracticable—makeshift ambulant treatment; (4) the advanced case, where tuberculin is being continued as symptomatic treatment. Medical Officers will be wise to bear this sensible classification in mind. We are glad to see that tuberculosis in children receives careful consideration, and considerable space is devoted to the treatment of localized tuberculosis. A number of charts add greatly to the value of the manual. There is a fairly representative bibliography, and a really workmanlike index. We are astonished to find the objectionable, and now to a great extent discarded, designation "phthisis" constantly appearing in these pages, and we could have wished that the authors had seen fit to fall into line with the best authorities in employing the term "tuberculous" rather than perpetuating the less correct designation "tubercular."

We are glad to find that Professor Sahli's well-known and exceptionally able monograph has now been translated into English.¹ Sahli has, in his clinic at Berne, for many years been using the tuberculin prepared at Neuchâtel under the direction of Professor Beraneck. Dr. R. W. Philip, of Edinburgh, has done much to make English practitioners appreciate the special merits of Beraneck's tuberculin.² The translation has been skilfully carried out by Mr. W. B. Christopherson from the third and enlarged edition of "*Tuberkulin-behandlung und Tuberkuloseimmunität*" (Basle: Benno Schwabe and Co., 1910), and, as Dr. Morland indicates in his introductory note, Professor Sahli has made alterations and additions which bring the work thoroughly up to date. Dr. Sahli, in his preface, explains that his purpose has been to provide medical practitioners with "a rational basis and scheme for the modern tuberculin treatment, which I regard as one of the most important problems of therapy, and a great advance in the modern campaign against tuberculosis." The volume is divided into two parts—practical and theoretical. In the former, details of technique are dealt with, directions given as to suitability of various tuberculin conditions for tuberculin treatment, and methods of procedure explained. In the second part such subjects are discussed as the chemical nature of tuberculin and the differences between the various tuberculins, the meaning of reactions, natural immunity, the lysis theory, and much else which is still obscure and more or less hypothetical. The book is a very valuable contribution to the literature of tuberculin, and the English edition is in every way worthy. No physician should think of taking up tuberculin therapy without having first carefully studied this monograph.

Mr. Barber has written a brochure³ in which he enthusiastically advocates the use of tuberculin in accordance with the methods of

¹ "*Tuberculin Treatment, including a discussion of the Nature and Action of Tuberculin and of Immunity to Tuberculosis.*" By Dr. Hermann Sahli, Professor of Medicine in the University of Berne. Translated from the third German edition by Wilfred B. Christopherson. With an Introductory Note by Egbert Morland, M.B., B.Sc. (Lond.), M.D. (Berne). Pp. viii + 198. London: John Bale, Sons and Danielsson, Ltd., Oxford House, 83-91, Great Titchfield Street, Oxford Street, W. 1912. Price 7s. 6d. net.

² The agent for Professor Beraneck's tuberculin in Great Britain is Mr. A. K. Stewart, Lynedoch Place, Edinburgh, from whom full particulars as to the various dilutions suggested by Dr. R. W. Philip may be obtained.

³ "*The Tuberculin Treatment of Consumption.*" By H. Vaughan Barber, M.A., L.R.C.P. Pp. 32. London: James Nisbet and Co., Ltd., 22, Berners Street, W. 1912. Price 6d. net.

Dr. W. Camac Wilkinson, as carried out at the Tuberculin Dispensary, 263, Kennington Road, London, S.W. Reference is made to the work of the "Tuberculin Dispensary League," of which the Countess of Mayo is President, and Dr. Camac Wilkinson Chairman.¹

Messrs. A. and M. Zimmermann, the English agents of Messrs. Kalle and Co., of Biebrich-on-the-Rhine, have sent us a number of booklets dealing with a new form of tuberculin introduced by Professor Rosenbach of Göttingen.² Rosenbach's tuberculin is produced by biochemical processes in the growth of the *Trichophyton holosericum album* on living tubercle bacilli and their nutrient media. It is claimed that its effects on tuberculous persons and animals differ in material points from that of other tuberculins. The preparation can be used for pulmonary and other non-surgical forms of tuberculosis by subcutaneous injection, but in the case of lupus and certain forms of surgical tuberculosis it is advised to inject the tuberculin directly into the tuberculous tissues. No doubt Rosenbach's tuberculin will receive full investigation in this country.

Dr. Alfred Harris, in his recently-published monograph on pulmonary tuberculosis³—unhappily designated "phthisis" in the title—provides an interesting account of tuberculin treatment as carried out at the Southampton Municipal Hospital. P.T.O. ["Perlsucht Tuberculin Original," bovine old tuberculin original] is employed, preparations being obtained from Meister Lucius and Brüning, of Hoechstädt-on-Main. "A pipette graduated into $\frac{1}{200}$ c.c. is used, the diluting fluid being a $\frac{1}{2}$ per cent. solution of carbolic acid. For the initial small doses I dilute the P.T.O. solution with four times the quantity of the carbolic solution; this solution keeps well for a few weeks." A card table is made out for use in actual practice. The initial dose chosen is usually 0·002 c.c. The patients are often injected twice a week; an endeavour is made to so order the dose that no reaction above 99·4 is obtained. A table is given indicating the results of treatment. Dr. Harris's brochure is an interesting résumé of the more important facts and opinions in regard to tuberculosis and anti-tuberculosis work, and will be of service to doctors and others preparing lectures or using other means for the enlightenment of the public.

¹ Full particulars of the Tuberculin Dispensary League can be obtained from the Hon. Secretary, Mrs. Stewart Erskine, 10, Ovington Gardens, London, S.W.

² "A New Tuberculin." By Professor Dr. Friedrich J. Rosenbach, Director of the Surgical University Polyclinic, Göttingen. Translated from *Deutsche Medicinische Wochenschrift*. Pp. 32. Biebrich-on-the-Rhine: Kalle and Co. British agents: A. and M. Zimmermann, 3, Lloyds Avenue, London, E.C. "Experiences with Rosenbach's Tuberculin." By Drs. R. Kohler and Martha Plant. Pp. 64. London: A. and M. Zimmermann, 3, Lloyds Avenue, E.C.

³ "The Etiology, Diagnosis, and Prophylaxis of Pulmonary Phthisis, considered chiefly from the Public Health Point of View, with an Appendix on the Tuberculin Treatment of the Disease." By Alfred Harris, M.B., Ch.B. (Vic.), D.P.H. (Cantab.), Senior Assistant and Deputy Medical Officer of Health, Southampton; Bacteriologist to the Southampton Corporation; formerly Resident Medical Officer to the Crossley Sanatorium. Pp. 126. Bristol: John Wright and Sons, Ltd. 1912. Price 2s. 6d. net.

TUBERCULOSIS AND NATIONAL INSURANCE.

Mr. Charles H. Garland has written a little book¹ which throws considerable light on some of the problems which cluster about tuberculosis and insurance against sickness. It appears at an opportune time, and may be commended to the careful study of those interested in the economic and sociological aspects of tuberculosis, and responsible in any way for the insurance of the workers. Mr. Garland shows that, while in Great Britain we have a consumptive population of from 250,000 to 300,000, yet, reckoning treatment to have an average duration of four months, there is not provision for more than 22,000 cases per year. The friendly societies pay out to their members annually considerably over £4,000,000 in sickness benefits, and no less than 28 per cent. of this is spent on sickness caused by consumption. It is shown that the National Insurance Act provides means whereby the present accommodation for consumptive cases can be trebled, but large numbers of tuberculous sufferers will be left unprovided for. No person can be counted as self-supporting when attacked by consumption unless he belongs to a family whose income is at least £400 a year. "Between the wage limit of £160 fixed by the National Insurance Act and the point where incomes of £400 a year are earned there is a population of over 3,000,000. In addition, there are all the employés of public bodies, civil servants, and others, who have been exempted from the operations of the Act." Clearly, as Mr. Garland urges, there will be need for some time to come for voluntary associations on lines similar to those of the Post-Office Sanatorium Society. His monograph not only gives an interesting account of the evolution of this very successful effort, but also provides valuable information regarding the organization and administration of such measures. In an appendix Mr. G. F. Robinson, of the Legal and General Assurance Company, has a suggestive communication on "Insurance against Contraction of Phthisis."

TUBERCULOSIS AND FLY-CARRIERS.

The house-fly has for so long been viewed as a domestic animal, often troublesome and never useful—a sort of necessary evil calling for patience and philosophic resignation—that it is with something of a start that we awake to a realization that *Musca domestica* is a treacherous disease carrier. Dr. Howard's ably-written monograph will prove a revelation to even well-informed doctors and would-be up-to-date sanitarians.² It is certainly a work which must receive the fullest study by all responsible for the protection of domestic well-being and the preservation of public health. In clear, well-chosen

¹ "Insurance against Consumption and the Administration of 'Sanatorium Benefit,' including an Historical Account of the Post-Office Sanatorium Society." By Chas. H. Garland, Secretary and Founder of the Post-Office Sanatorium Association; Chairman of the National Association for the Establishment and Maintenance of Sanatoria for Workers. Pp. 120. London: The Scientific Press, Ltd., 28, Southampton Street, Strand, W.C. 1912.

² "The House-Fly Disease Carrier: An Account of its Dangerous Activities and of the Means of Destroying It." By L. O. Howard, Ph.D. Pp. 312. London: John Murray, Albemarle Street, W. 1912. Price 6s. net.

language, without exaggeration, and yet in a manner which has the fascination of a well-conceived biography. Dr. Howard tells of the life-history of the house-fly, or the "typhoid fly," as he injudiciously, as we think, designates it. The zoological position, habits, and diseases, are all carefully described, reference being made to the results of recent researches by various investigators. But the most important sections of the book deal with the carriage of disease by flies, and the preventive measures which should be adopted. It is shown that the house-fly is undoubtedly a disseminator of the tubercle bacilli. The results of Dr. F. T. Lord's researches are quoted: "Flies may ingest tuberculous sputum and excrete tubercle bacilli, the virulence of which may last for at least fifteen days. The danger of human infection from tuberculous fly-specks is by the ingestion of the specks on food. Spontaneous liberation of tubercle bacilli from fly-specks is unlikely. If mechanically disturbed, infection of the surrounding air may occur." It is advised that "tuberculous material (sputum, pus from discharging sinuses, faecal matter from patients with intestinal tuberculosis, etc.) should be carefully protected from flies, lest they act as disseminators of the tubercle bacilli. During the fly season attention should be paid to the screening of rooms and hospital wards containing patients with tuberculosis and laboratories where tuberculous material is examined. As these precautions would not eliminate fly infection by patients at large, food-stuffs should be protected from flies which may already have ingested tuberculous material." Dr. Howard sums up thus: "Much stress is now being laid upon the alimentary transmission of tuberculosis; and, in view of the facts just stated, it can hardly be denied that the house-fly is a serious danger in the carriage of the 'white plague.'" Dr. Howard's book is one of intense interest, and should be read by every thoughtful man and woman.

MANUALS FOR MEDICAL PRACTITIONERS, AND WORKS OF REFERENCE.

Dr. Woodcock has written an outspoken book on a doctor's life and work,¹ dealing in terse epigrammatic phrase and revealing criticism, with the character, conduct, ideals, and duties of the medical practitioner. It is a book which every doctor will delight to read, and it will assist laymen to see matters from the medical standpoint. There are chapters on professional bearing and hospital appointments, the work of general practitioners and specialists and consultants, contract practice, Poor Law experiences, public health procedures, post-graduate work, and much else. But amidst this striking collection of clever essays we are glad to find several able expositions of the tuberculosis problem. Dr. Woodcock has given much attention to the study of consumption, and has accomplished splendid work in Leeds in furthering the arrest of the great white plague. His descriptions of the ravages of this disease and his account of the coming conquest of the enemy are powerful and convincing, and we would suggest to Dr. Woodcock the advisability of expanding

¹ "The Doctor and the People." By H. De Carle Woodcock. Pp. xii + 312. London: Methuen and Co., Ltd., 36, Essex Street, W.C. 1912. Price 6s. net.

this chapter on tuberculosis into a complete medico-sociological study of the whole subject. Edinburgh medicals will be specially interested in this volume for its charming delineations of well-known medical personalities in Old Reekie.

Dr. A. T. Nankivell has prepared a new edition of Mr. W. C. C. Pakes' useful handbook of practical hygiene.¹ The book has been designed to meet the requirements of students preparing for a diploma in public health. Particulars are given as to the carrying out of all necessary practical laboratory work, apart from bacteriological methods, required for D.P.H. examinations. The work throughout is excellent. The sections on milk and butter analysis, disinfectants, and meat inspection, will be of special value and service to those interested in tuberculosis.

Mr. C. J. Heath has published his Address, originally delivered before the West Kent Medico-Chirurgical Society, in convenient brochure form.² Records of many cases are given, and the author's views as to treatment are fully explained.

Mr. George Thomson has issued a suggestive booklet³ on "Sleep and Digestion," the substance of which formed a lecture delivered by the author in Sir Isaac Newton's old dining-room.

"The Medical Annual" by universal consent is an indispensable year-book, which no practitioner can afford to be without. It is now so well known, and its value so thoroughly appreciated, that any reference may be considered as quite unnecessary. We desire, however, to congratulate all connected with its production, on the excellence of this year's issue.⁴ Thirty-three names appear as "contributors," and the articles provide in concise form just the up-to-date information and guidance required by the busy practitioner. Dr. J. J. Perkins deals with tuberculosis of the lungs and bronchial glands, and Mr. Priestley Leech tuberculosis of joints. There is an all too short section on tuberculin. Dr. Joseph Priestley writes on auto-inoculation in pulmonary tuberculosis, and explains the Public Health (Tuberculosis) Regulations of 1911. There is also a useful list of sanatoria for consumption and other forms of tuberculosis.

The "Bader-Almanach" has been well known and appreciated on the Continent for more than thirty years. This year, for the first time,

¹ "The Science of Hygiene: A Textbook of Laboratory Practice for Public Health Students." By Walter C. C. Pakes, D.P.H. (Camb.), F.I.C., late Demonstrator of Sanitary Science and Bacteriologist to Guy's Hospital, etc. New edition. Revised by A. T. Nankivell, M.D., B.S. (Lond.), D.P.H. (Camb.), Demonstrator of Public Health, King's College. Pp. xi+164. London: Methuen and Co., Ltd., 36, Essex Street, W.C. 1912. Price 5s. net.

² "The Nature and Causes of Catarrhal 'Throat,' or Hereditary Deafness: An Explanation of Paracusis Willisii: the Mechanism of Aural Accommodation, the Regulation of Labyrinthine Fluid Pressure, the Tightening of Relaxed Tympanic Membranes and Joints, and the Relief of Tinnitus Aurium." By Charles J. Heath, F.R.C.S. Pp. 132. London: Printed by Good, Ltd., Burleigh Street, Strand, W.C. 1912. Unpriced.

³ "Sleep and Digestion." By George Thomson, L.D.S., Hon. Dental Surgeon to the Royal Hospital for Diseases of the Chest. Pp. 25. London: John Bale, Sons and Danielsson, Ltd., 83-91, Great Titchfield Street, W. 1912. Price 1s. net.

⁴ "The Medical Annual: A Year-Book of Treatment and Practitioner's Index." Thirtieth year. Pp. cxix+887. Bristol: John Wright and Sons, Ltd. 1912. Price 8s. 6d. net.

an English edition has been issued.¹ Dr. O. Thilenius contributes the section on "Diseases of the Respiratory Organs," which includes a lengthy discussion of "tuberculosis and pulmonary consumption." The first part of the volume deals with bathing-places and climatic health resorts; the latter section with sanatoria and cure establishments. The work is a valuable one for reference.

A useful list of consumption sanatoria appears in this year's issue of "Medical Homes for Private Patients," a little volume which should be within the reach of every medical adviser.²

We are glad to welcome a third edition of Dr. Warren Crowe's sensible brochure on the home management of consumptives.³ It contains a series of rules which tuberculous subjects will do well to follow. This unpretentious little manual is just the guide which many patients desire and need to keep them in the path of hygienic righteousness.

¹ "Bader-Almanach : Reports of Spas, Climatic Stations, and Sanatoria, in Germany, Austria-Hungary, Switzerland, and Adjoining Countries, for Physicians and Patients." English edition. Pp. 236. Berlin : Rudolf Mosse, 46-49, Jerusalemer Strasse. 1912. According to the preface, copies of this edition are being forwarded free to practitioners in Great Britain, America, and the Colonies.

² "Medical Homes for Private Patients." Seventh year. A Classified Directory, with Lists of Medical Consultants. Edited by R. Pritchard Binnie. Pp. 116. London : The Scientific Press, Ltd., 28, Southampton Street, Strand, W.C. 1912. Price 6d. net.

³ "Consumption : Treatment at Home and Rules for Living." By H. Warren Crowe, M.D. (Oxon). Third edition. Pp. 36, with chart. Bristol : John Wright and Sons, Ltd. 1912. Price 1s. net.

PREPARATIONS AND APPLIANCES.

PNEUMOSAN.

THE new preparation PNEUMOSAN (amylthiotrimethylamine) is still attracting much attention. It is being used in many sanatoria, and reports received from institutions, at home as well as abroad, testify to its service. Dr. Penn Milton, in a recent issue of the *Lancet*, reports favourably of its use in fifty cases. Dr. Jane Walker, Medical Superintendent of the East Anglian and Maltings Farm Sanatoria, Suffolk, has employed Pneumosan for a number of cases. The following quotations from her report will be of interest and certainly merit consideration : "In one case, though the fever was not diminished, the sputum, which was abundant, almost disappeared. In another, a febrile case with very profuse sputum, there was marked diminution in the amount of expectoration, and this case was markedly better in all ways. In one very severe case the cough was diminished and the expectoration markedly lessened in quantity, and the temperature, which had been raised for some months previously, was reduced to normal. A case of double antrum disease with a raised temperature, who was operated on both nasally and by the mouth, with little permanent benefit, was very much improved in all ways by her injections. She was more vigorous, and began to put on weight, which she had not done previously. One long-standing chronic case, who had many other things in the way of special treatment, has much improved in general condition, and the physical signs have diminished considerably. A case of pulmonary-abdominal tuberculosis that was at a standstill, and gaining no weight, has steadily put on weight since her injections, and is much improved in general condition. Generally speaking, cases have shown diminution in cough and expectoration, lowering of temperature, and improvement in general condition. The improvement in general condition has been more marked than in the physical signs of the disease. The effect of the drug seems to have more a general tonic effect than any specific action on the disease. As yet none of the cases can be classed as cures, unless they should continue to keep well for some considerable time—viz., two years." Such evidence as this clearly indicates that Pneumosan is deserving of a full and unprejudiced trial.¹

THE "DUMB NURSE."

Our attention has recently been drawn to an ingenious and thoroughly serviceable combined bed table, bed book-holder, and back-rest, which, after thorough testing, we desire to commend to the notice of our readers. It will be of the greatest comfort and convenience to

¹ Pneumosan can be obtained from the Pneumosan Chemische Fabrik, London office: 157, Great Portland Street, W. Pneumosan is supplied in bottles containing some 25 grammes of the drug—probably sufficient for the treatment of one advanced case—at 30s. per bottle, carriage paid to any part of the United Kingdom. A special syringe, made to hold the maximum dose, with two needles, in case, may be obtained for 5s.

patients, invalids, and, perhaps we might add, healthy luxury-lovers. The DUMBNURSE, for such is the name given to it by its inventor, Mr. Arthur Englefield, will certainly be invaluable in hospitals, sanatoria, and all institutions devoted to the care of the sick and



THE "DUMBNURSE" AS A TABLE.



THE "DUMBNURSE" AS A BACK-REST.

THE "DUMBNURSE" AS AN AID
TO THE TOILET.THE "DUMBNURSE" AS BED REST
AND READING-STAND.

afflicted.¹ Instead of giving any lengthy description of this excellent contrivance, we have arranged for the appearance of several illustrations, which accurately exemplify the chief features and services of the "Dumbnurse."

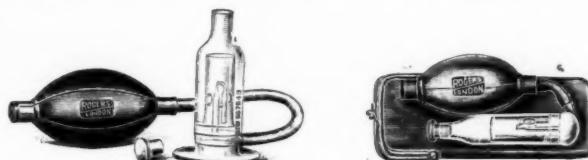
SPRAYS AND NEBULIZERS.

Morbid conditions of the respiratory passages exist in a large number of cases of pulmonary tuberculosis; and if the best is to be done for the patient, the chronic inflammatory and other abnormal states involving nose, pharynx, larynx, and the adjacent parts, must be adequately dealt with. In a large number of instances, cleansing,

¹ The "Dumbnurse" is manufactured by Mr. Arthur Englefield, Longford, Gloucester, in fumed oak. Price 15s., postage 8d.

antiseptic, deodorant or other forms of spray or douche are called for. Modern ingenuity and skill have now provided a number of appliances whereby medicaments and hygienic preparations can be easily and effectively applied to the naso-pharynx and larynx. Reference to several of the newer forms of spray and nebulizers will, we believe, be of practical service.

Mr. Frank A. Rogers is an expert in the construction of sprays and nebulizers. He has recently introduced a particularly clever and convenient contrivance, the "CRYSTAL" NEBULIZER, which produces a very fine spray.¹ It works on a new principle, and differs considerably from many other forms. The atomization takes place inside the inner chamber, the heavy portion returning to the bottom, and the fine particles escaping by the two side-holes. It is thus practically impossible for



THE "CRYSTAL" NEBULIZER.

anything but the finest vapour to escape. The accompanying figures indicate the general appearance of this admirable spray, and also show in what convenient pocket-forms it is available.

Messrs. C. J. Hewlett and Son, Ltd., provide a particularly neat and effective spray, which they designate the SUPER-NEBULIQUE. Its form is shown in the accompanying figure.² As will be seen, it can be



THE "SUPER-NEBULIQUE" SPRAY.

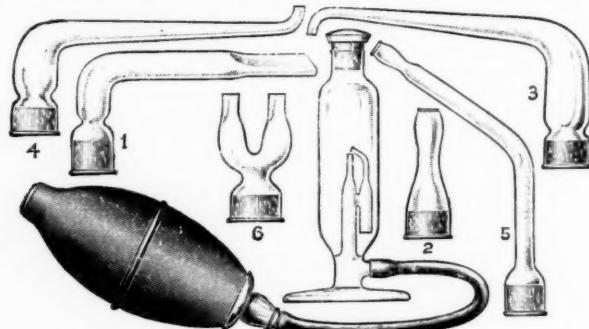
easily held in the hand, and it produces a fine cloud with heavy oil, aqueous or spirituous solutions. It possesses many advantages. It

¹ Full particulars and prices can be obtained on application to Mr. Frank A. Rogers, 327, Oxford Street, London, W.

² Messrs. C. J. Hewlett and Son, Ltd., 35-42, Charlotte Street, Great Eastern Street, London, E.C., supply the "Super-Nebulique" Spray at 5s. each, or 48s. per dozen. The same firm also provide a series of reliable "Nebulique" compounds for use with their various sprays.

can be employed in practically any position. It allows of the smallest possible quantity of liquid being used. Being made of glass, it can be readily cleansed and sterilized.

Messrs. Parke, Davis and Co. have perfected their "GLASEPTIC" NEBULIZER.¹ It is now provided with various attachments, as indicated in the accompanying illustration. The appliance works effectively with only a very small volume of the medicament, and is less liable to clog than are appliances with vulcanite tubes. By placing the stopper in the nozzle, the fluid may be left in the nebulizer without risk of oxidation, evaporation, or leakage, and without the danger of metallic contamination. All parts which come into contact with the inhalant are readily cleansed by boiling in water. The pneumatic apparatus seems to be of specially durable quality. The attachments, which are supplied separately, either in sets or singly, facilitate medication of the nose, etc., by concentrating the nebula on the part it is desired to treat. They are intended primarily for use with oily solutions, but may also be used with any aqueous solution



THE "GLASEPTIC" NEBULIZER AND ITS ATTACHMENTS.

which has a viscosity not less than that of a 25 per cent. glycerin solution, and one of the attachments may be used with any aqueous solution. The same firm provide a series of inhalants for use with the above-described appliance. Acetozone inhalant is actively germicidal, but at the same time non-irritant to mucous membrane and non-toxic. Adrenalin inhalant is constringent, antiseptic, and sedative, and is of special value in congested conditions of mucous surfaces, and when used to spray the throat before meals, it is found to diminish dysphagia in cases of tuberculous laryngitis. Chloretoe inhalant is antiseptic, antispasmodic, and soothing; it is an excellent means of alleviating distressing cough and dyspnoea, and is useful in many cases of tuberculosis.

Messrs. Oppenheimer, Son and Co., Ltd., have prepared a new PLATINO THROAT SPRAY, designed by Dr. Macnaughton Jones.² The

¹ Particulars, with prices and lists of the "inhalants," may be obtained on application to Messrs. Parke, Davis and Co., 40, Beak Street, Regent's Street, London, W.

² Particulars and prices of Dr. Macnaughton Jones's Platino Throat Spray will be sent on application to Messrs. Oppenheimer, Son and Co., Ltd., 179, Queen Victoria Street, London, E.C.

mounts are lined with platinum, so rendering them proof against corrosion by medicaments. This is a great improvement. There are two nozzles, one straight and the other curved, the latter being particularly serviceable for spraying the back of the nose, the pharynx



THE PLATINO THROAT SPRAY.

and larynx. Two containers are supplied, one for use when large quantities of fluid are employed, as in irrigations, the other for the use of small quantities and costly agents. Messrs. Oppenheimer supply, under the designation of ASEPTOIDS, convenient solid cubes which, when dissolved in water, make excellent gargles or douches.

A PORTABLE DOUCHE.

A neat, simple, light, and inexpensive form of PORTABLE DOUCHE CAN has been sent us, which we think will be of the greatest service to many cases.¹ It is made of aluminium and on the telescopic prin-



THE PORTABLE DOUCHE CAN.

ciple. When extended it holds nearly a quart, and when closed it occupies no more space than an ordinary enema. There are many

¹ The Portable Douche Can is supplied by Messrs. R. Sumners and Co., Ltd., 50A, Lord Street, Liverpool, at 5s. without tubing.

patients, and, indeed, not a few persons in active work, who, when travelling or away from home, will find such a contrivance as this a veritable boon.

A TUBERCULIN CHART.

Tuberculin is rapidly increasing in favour, and is being widely employed. It is essential, if ill effects are to be avoided, that its administration should be carried out with scientific accuracy, and that a careful record of all injections should be faithfully kept. Messrs. John Bale, Sons and Danielsson, Ltd., have sent us specimens of their new **TUBERCULIN CHART**, which we believe will be found of great service.¹ An essential to tuberculin treatment is the possession of accurate information regarding the effect—local, general, and focal—of each injection, before the next dose is planned. Much of this information has to come from the patient himself, and for its collection a chart is invaluable; indeed, for ambulant or home treatment, whether of pulmonary tuberculosis or other forms of localized tuberculosis, it is wellnigh indispensable. The new chart has been adapted from one published by Dr. Lawrason Brown in Dr. Klebs's textbook "*Tuberculosis*," with necessary modifications to render it suitable for use in both private practice and hospital service.

CELLULAR CLOTHING.

Science as well as fashion may be allowed influence in the selection and use of health-preserving clothing. It is remarkable how frequently patients who have sought and obtained the best medical advice still continue in hygienic error as regards their clothing. In the care of the tuberculous and the tuberculously disposed it is of the greatest importance to attend to the matter of apparel, and especially of underclothing. Cellular underwear provides a rational form of open-air treatment for the skin, and by its special characters allows of the maintenance of sanitary conditions, which go far to determine the general well-being of the individual. After long-continued experience of the **AERTEX CELLULAR CLOTHING**, we have no hesitation in strongly commending it to the consideration of both physicians and patients. The Aertex cellular underwear is now available in a variety of garments suited to the requirements of men, women, and children.² For summer wear and use at tennis and the like the new cellular combinations of day-shirt and trunk-drawers should prove very popular. For patients undergoing sanatorium or open-air treatment cellular clothing is practically ideal. Garments of this class are porous, light, comfortable, and, while excellent non-conductors of heat, allow of free perspiration and full aeration of the cutaneous surface. A word may be added as to the benefits of the **AERTEX CELLULAR COTTON SHEETS**. These are a great

¹ The Tuberculin Chart (No. 21) is supplied at the following prices: 50 copies, 3s.; 100, 5s.; 250, 10s. 6d.; 500, 20s. Specimens may be obtained on application to Messrs. John Bale, Sons and Danielsson, Ltd., 83-91, Great Titchfield Street, Oxford Street, London, W.

² Booklets and price-lists, giving full particulars of Aertex Cellular Clothing, may be obtained on application to the Central Offices of the Cellular Clothing Company, Ltd., 72 and 73, Fore Street, London, E.C.

improvement on the old-fashioned form of bed-linen, and will be found particularly suitable for many delicate, tuberculous and tuberculously disposed cases.

A SECTIONAL BOOKCASE.

For the rational care of books in a hygienically constructed and managed home, or for the equipment of a sanatorium, hospital, or open-air school, a modern sectional bookcase is most desirable. An admirable form is that known as the "OXFORD" SECTIONAL BOOKCASE.¹ It is particularly attractive in form, very different from the ordinary ungainly and bulky bookcases so commonly met with. The construction is simple but thoroughly effective, and the workmanship of the best. There is probably no other kind of sectional bookcase which is so easily and speedily adjusted. It is practically dustproof, and sections are supplied fitted with glass doors. The wood is well seasoned and has been specially treated to resist the attacks of insects. The "Oxford" can be supplied to meet any desired dimensions, a great advantage to householders and directors of institutions. Having had personal experience of the advantages of these cases, we can recommend them without reservation.

A HYGIENIC TELEPHONE.

The telephone now occupies such a prominent rôle in private life and public services that it is essential that systematic care should be exercised in providing for the carrying out of thorough cleansing of telephone mouthpieces and call-boxes. Our attention has been drawn to an ingenious arrangement for the cleansing of public telephone-boxes. It is designated the CALL-BOX DISINFECTOR. The opening of the door of the telephone call-box operates an air-pump, and a volume of air thus collected is forced through a liquid disinfectant and afterwards carried into the mouthpiece of the telephone. The result is that immediately after a telephone has been used, and the person having used it is leaving the box, a strong rush of air impregnated with disinfectant (deodorized lysol), emerges from the telephone mouthpiece, cleanses it of harmful germs which may have been left by the previous speaker, and also keeps the call-box itself pure and sweet. As a further precaution, when the door is opened for the next person who desires to use the telephone, the same operation takes place. The apparatus costs very little to produce, and by its means the disinfecting of call-boxes can, it is claimed, be carried out at a cost of under 4d. per week. The inventor has also introduced the WHISPERPHONE.² Several important points are claimed for this novel telephone mouthpiece. The shape of the mouth-piece prevents outside sounds reaching the telephone diaphragm when the instrument is in use; an antiseptic ring prevents contagion being passed from one telephone user to another; the holes in the walls of the Whisperphone provide an outlet for the breath, and thus give uninterrupted way for the sound-waves; the wire coil, the essential element in

¹ The makers of the "Oxford" Sectional Bookcase are Messrs. William Baker and Co., The Broad, Oxford, from whom an illustrated price list can be obtained on application.

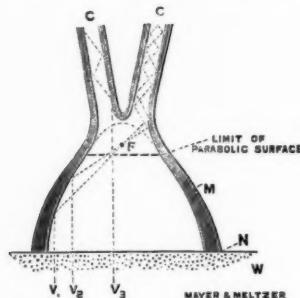
² The Whisperphone is made by the Whisperphone Syndicate, Ltd., 82 and 83, Fenchurch Street, London, E.C.

the invention, picks up the sounds and impinges them on to the diaphragm. It is only necessary to speak in a soft voice into the Whisperphone to be heard perfectly. If a private conversation is desired over the telephone, it is only necessary to place the mouth directly in contact with the Whisperphone, and persons a few feet away and in the same room as the speaker cannot hear what is being said to the person at the other end of the line. Having tested the Whisperphone, we are convinced that it only needs to be used to be thoroughly appreciated.

A NEW STETHOSCOPE CHEST-PIECE.

Since Laennec introduced the stethoscope, this valuable aid to clinical precision has undergone considerable evolution; and although many still pin their faith and practice on the simple old-fashioned, but very effective, wooden forms, it must be admitted that some of the modern modifications offer many advantages.

Dr. H. A. Haig, of Cardiff, has invented a new chest-piece for the binaural stethoscope. Its chief features are shown in the accompanying figure. The principle upon which it depends is the reflection from a parabolic surface whereby sound-vibrations coming from the outer portion of the area of chest covered by the instrument are reflected to



HAIG'S STETHOSCOPE CHEST-PIECE.

M, Wall of chest-piece in section; *W*, chest wall; *V*₁, *V*₂, peripheral vibrations which are reflected through focus *F*; *V*₃, central vibrations; *C*, *C*, collecting tubes.

a focus, and so on into the collecting tubes, without the occurrence of multiple reflections from the wall of the chest-piece such as occur in the ordinary form of chest-piece, where the convex inner surface does not tend to focalize the peripheral vibrations. The collecting tubes in this chest-piece are so placed that their inner openings are a short distance above the focus, each tube collecting direct vibrations as well as the majority of those reflected through the focus. In the examination of pulmonary and cardiac cases, particularly in children, the parabolic form of chest-piece will certainly be of service. The chest-piece (which can be fitted on to the rubber tubes of the ordinary binaural stethoscope) is an "all-metal" one, and the collecting tubes are fitted with

short detachable pieces which easily slip into the rubber tubes. A stethoscope so fitted is easy to carry, as the two parts can be readily packed into a small flat case.¹

NEW MEDICINAL PREPARATIONS.

Mr. W. Martindale, who has of recent years introduced a number of excellent preparations of particular interest and value to physicians dealing with tuberculous subjects, has now placed on the market an excellent nutrient and tonic—MILK AND GLYCEROPHOSPHATES.² It is easily prepared for use, it is palatable, and it undoubtedly assists nutritional processes. It is readily rendered ready for use by simply mixing the powder with hot water—not heating. The fluid produced bears a strong resemblance in taste and appearance to a cup of fresh milk. The dose of glycerophosphates which it contains is practically devoid of objectionable flavour. It is guaranteed to contain all the cream of the original milk. In our opinion, the preparation may be commended as an agreeable restorative and as possessing valuable nutrient properties. It is, indeed, to a great extent to be viewed and used as an easily-digested complete food.

Mr. Martindale has also introduced two new soluble aceto-salicylates—TYCALSIN and TYLLITHIN—which promise to prove valuable anti-pyretic and analgesic preparations. They certainly deserve careful testing, and will probably be found very useful in dealing with some of the intercurrent disorders so frequently occurring in tuberculous cases and other patients undergoing open-air treatment.

¹ Dr. Haig's Chest-Piece is supplied by Messrs. Mayer and Meltzer, 71, Great Portland Street, London, W. Price 8s. 6d.; fitted with stout rubber tubes and ear-pieces, 12s. 6d.; or with binaural stethoscope, 16s. 6d.

² Full particulars may be obtained from Mr. W. Martindale, 10, New Cavendish Street, London, W.

NOTES.

HOME TREATMENT OF THE CONSUMPTIVE.

TUBERCULOSIS is in great measure a home-born and home-bred disease. Even when conditions of occupation predispose to consumption, a hygienic ordering of home life can accomplish much in maintaining powers of resistance. For many smitten with tuberculosis, the home is the battle-field where the struggle has to be waged. It is clear that, in fortifying prophylactic measures and in amplifying remedial procedures, more attention will have to be given to the regulation of home hygiene. To send patients to the almost ideal health environment of a sanatorium, and then in a few weeks or months to plunge them back into the gross insanitary circumstances of the average home of the necessitous poor, is both cruel and foolish. There is the utmost need for the organization of a complete system of home management and adequate "after-care" of the consumptive, if real progress is to be attained. In many districts medical officers of health and others are co-operating to secure necessary supervision of the conditions of home life and hygienic direction of the consumptive. Through the courtesy of Dr. James P. Watt, Medical Officer of Health for the County of Aberdeen, we are enabled to give an illustration of a substantial and comfortable form of shelter, which is available for the use of patients in connection with treatment in their own homes. Such an admirable example should find many imitators.¹

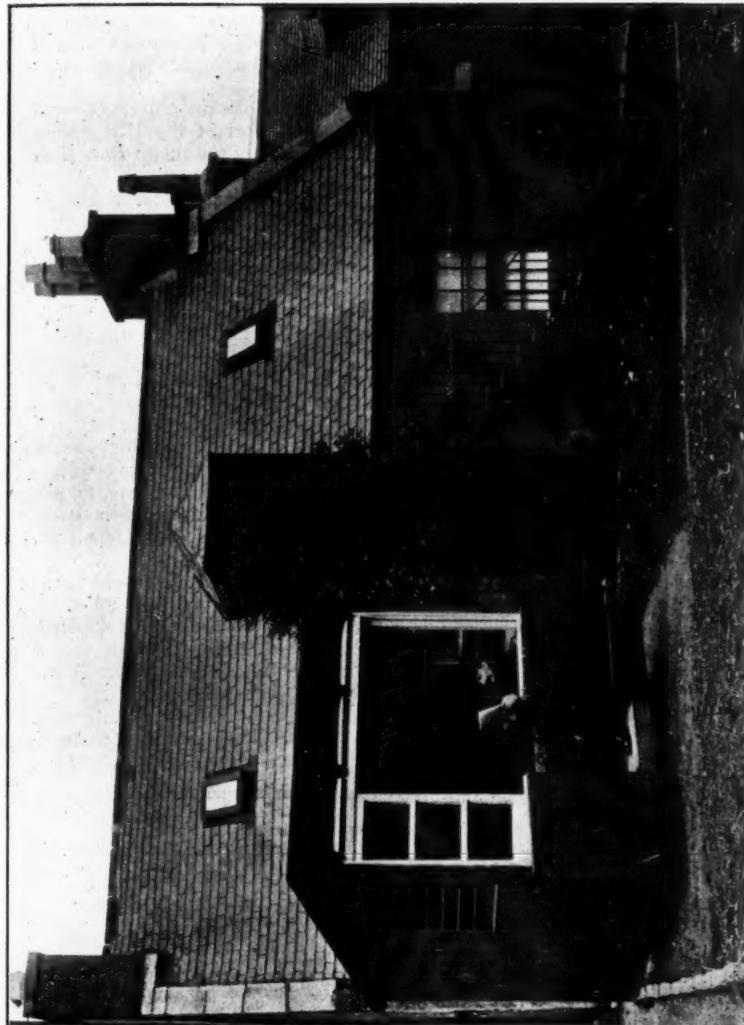
PATHS OF PROGRESS.

The Fourth Annual Conference of the National Association for the Prevention of Consumption and Other Forms of Tuberculosis was held June 5 to 7 in Manchester, under the auspices of the City of Manchester and the County Borough of Salford. The subjects under discussion were Tuberculosis in Childhood, the Powers and Duties of Sanitary Authorities and the Working of the National Insurance Act in Connection with Tuberculosis, and the Position and Work of Voluntary Societies in Connection with Tuberculosis under the National Insurance Act. A Tuberculosis Exhibition was also held, and Evening Lectures given by Dr. J. E. Squire, Dr. R. W. Philip, and Professor G. Sims Woodhead. Important Conferences on Tuberculosis have recently been held in Birmingham, Ipswich, and elsewhere.

The latest Report of the King's Sanatorium at Midhurst is a volume of special interest.² It contains a scientifically arranged analysis of the record of cases, with "statistics of ultimate results," and details of "after-histories." Dr. Radcliffe, the pathologist, contributes most interesting "impressions" of a recent visit to some of the more important of Continental bacteriological laboratories.

¹ Particulars as to equipment, price, and service, of revolving shelters in the home management of consumptives in Aberdeen and district will be found in the "Reports by the County Medical Officers and Sanitary Inspectors of the County of Aberdeen for 1911." Aberdeen : G. Cornwall and Sons. 1912.

² The Fifth Annual Report of the King Edward VII. Sanatorium, Midhurst, July, 1910, to July, 1911. P. 70. Midhurst, Sussex : The King Edward VII. Sanatorium. 1912. Price is. post free.



REVOLVING SHELTER FOR THE HOME MANAGEMENT OF CONSUMPTIVES.

They deal with such much-discussed matters as complement fixation in tuberculosis, tuberculin treatment, albumose-free tuberculin, standardization, the effect of digestion on tuberculin, the strains of the tubercle bacilli, and the serviceability of the von Pirquet cutaneous reaction. We could wish that other sanatoria might follow so excellent an example, and send members of their staffs on a voyage of scientific exploration.

All interested in the treatment of tuberculosis in childhood will do well to procure a copy of the Annual Report of the Harpenden Sanatorium.¹ It gives a history of the evolution of the institution, with description and plans and a record of cases.

The Reports of the Henry Phipps Institute are records always manifesting painstaking industry. Early in 1910 the Institute, which was founded and is maintained by Mr. Henry Phipps, was placed under the control of the University of Pennsylvania. Dr. Lawrence F. Flick, who ably organized and directed the Institute in its initial years, having resigned, Dr. H. R. M. Landis was appointed director. The last volume of the reports, in addition to clinical and pathological records, and contains several studies of value.²

The last Report of the Adirondack Cottage Sanatorium³ is of particular value, as it contains a statement regarding the classification adopted by the American Sanatorium Association, together with a definition of terms. It would be well if some such terminology could be agreed upon by medical superintendents of sanatoria in this country.

Dr. Theodore B. Sachs has published a suggestive brochure, detailing a system for the systematic examination of employés for the early recognition of tuberculosis.⁴ His watchwords are: Education, Detection, Control.

The Canadian Association for the Prevention of Tuberculosis is accomplishing excellent work, as is evidenced by its last report.⁵

The Reports of the Boston Association for the Relief and Control of Tuberculosis always contain suggestive material. The last issue⁶ presents an interesting illustration of a portable exhibit by the Association in the Boston branch public libraries and social centres.

We are glad to extend a welcome to the new journal dealing with vaccine-therapy, edited by Dr. R. W. Allen. This promises to be a valuable addition to periodical therapeutic literature.⁷

¹ The First Annual Report of the Harpenden Sanatorium, in connection with the National Children's Home and Orphanage. P. 34. London: The National Children's Home and Orphanage, Bonner Road, N.E. 1912. Price 3d.

² The Sixth Annual Report of the Henry Phipps Institute for the Study, Treatment, and Prevention of Tuberculosis. P. 137 Philadelphia: The University of Pennsylvania, 238, Pine Street. 1912.

³ The Twenty-seventh Annual Report of the Adirondack Cottage Sanatorium: Seventh Medical Supplement, prepared by Lawrason Brown, M.D., in accordance with the Suggestions of the National Association for the Study and Prevention of Tuberculosis. 1911.

⁴ "A Plan of Examination of Employees for Tuberculosis." By Theodore B. Sachs, M.D. P. 13. Chicago: The Chicago Tuberculosis Institute, Room 1351, Otis Building. 1912.

⁵ Eleventh Annual Report, with Transactions of the Annual Meeting, London, Ontario, May 17 and 18, 1911. Pp. 239. Ottawa: James Hope and Sons.

⁶ Eighth Annual Report of the Boston Association for the Relief and Control of Tuberculosis. Boston, Mass., U.S.A., 4, Joy Street. 1911.

⁷ *The Journal of Vaccine-Therapy.* Edited by R. W. Allen, M.D., B.S. London: H. K. Lewis. Monthly, 1s. net; annual subscription, 10s. 6d. post free.